COAL MINING

September, 1955 Volume 31, No. 9

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ANN ARBOR, MICH.

12th Semi-Annual Coal Stripping Number

What's the trick??

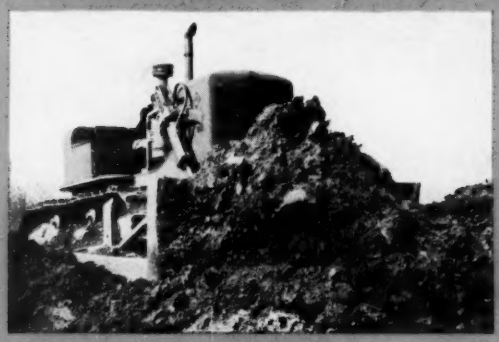
There's no trick at all to cutting coal production costs.

Simply call your Highway representative. He'll help you select exactly the right equipment for your job.

And . . . Highway's round-the-clock service will keep it running efficiently and economically . . . without down-time.

AA-1468

Lima 2400 . . . *ROBERT BAILEY*, Morrisdale.



There's nothing better than the best . . . that's why leading mines use Allis-Chalmers HD-21s to cut costs and boost production.

The new, powerful Allis-Chalmers HD-21 . . . *KRISTIANSON & JOHNSON COAL CO.*, Lanse.

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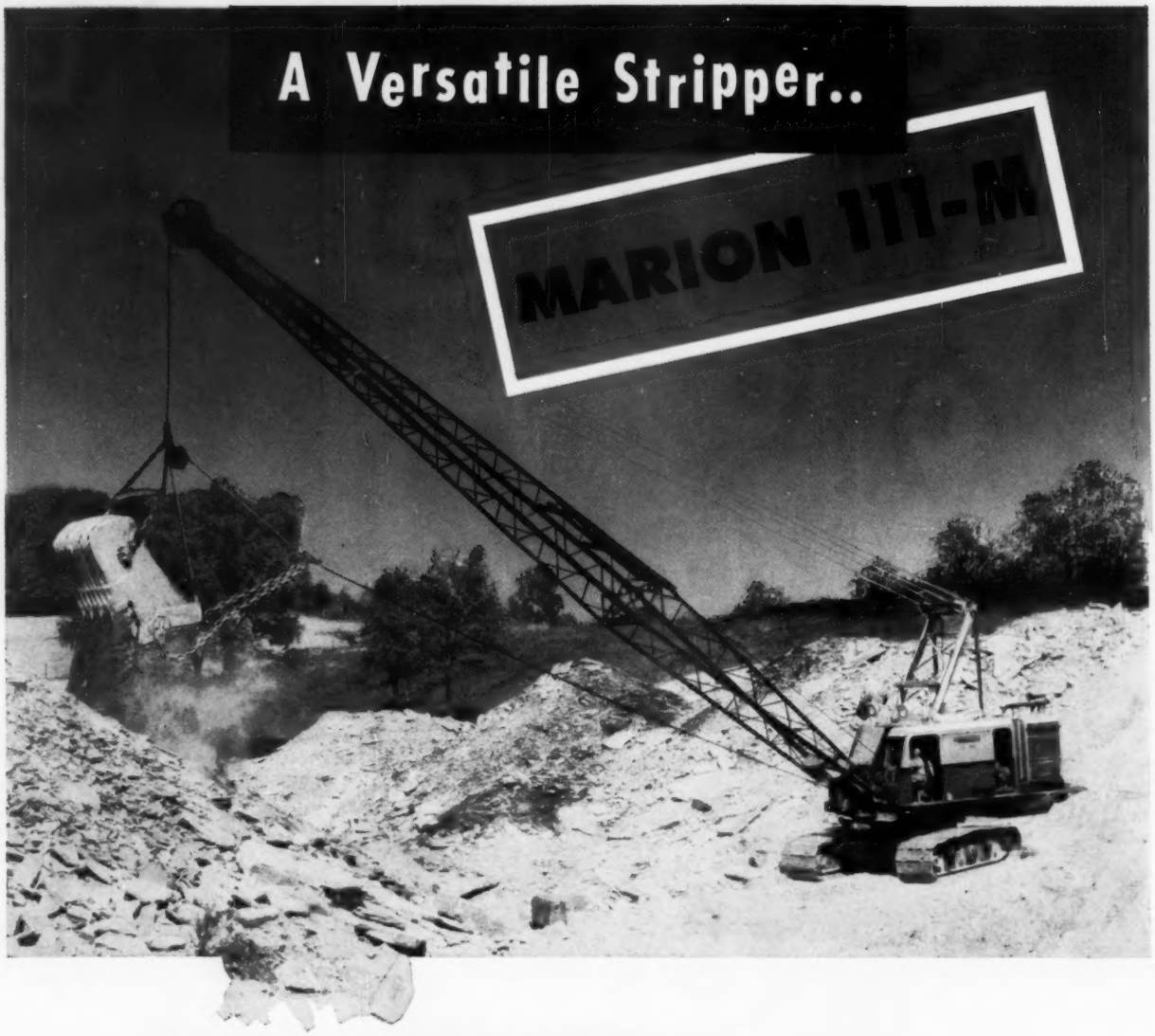

FIVE-YARD BITES Uncover 30-Inch Coal Vein in Ohio

This MARION 111-M dragline is stripping away 35 feet of gravel and rock to uncover a vein of coal ranging from 30 to 36 inches.

Its 5 cubic yard bites, with the help of the fast, cool swing of the 111-M, make steady progress. This 111-M is basically a diesel machine, but it has electric swing, which means speed and freedom from swing clutch problems.

Get more of the story about this strip mine and others in which MARION 111-M machines are playing an important part.

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MARION, OHIO, U. S. A.

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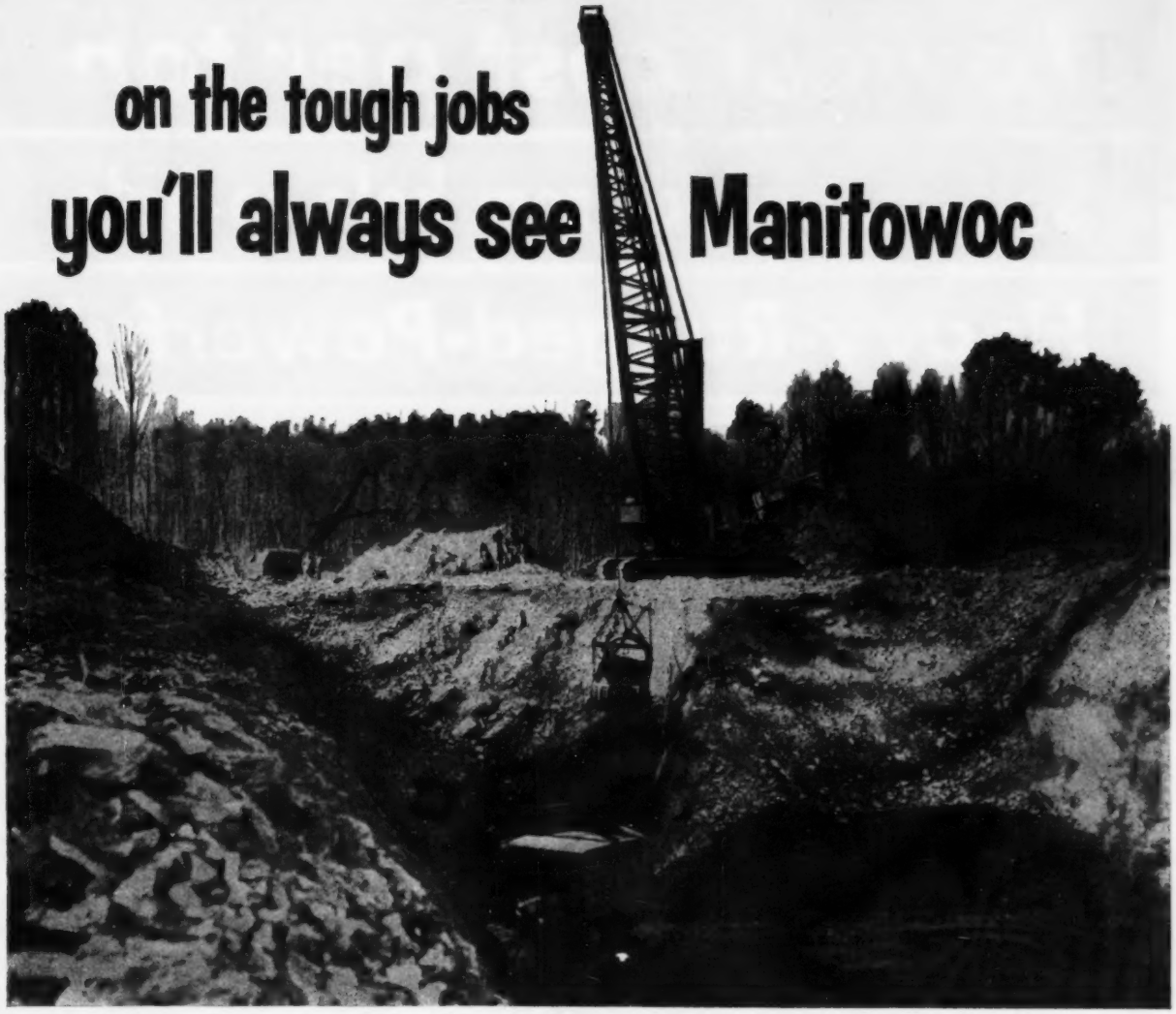
Your Confidence Is Justified *Where This Flag Flies*

on the tough jobs you'll always see Manitowoc



Manitowocs are a big producing team for Benjamin Coal Company, Ansonville Pa.

When the going is rough and rugged — you'll always find Manitowocs on hand to do the job. Profitable performance on tough operations is a Manitowoc specialty.

Here are 3 Manitowocs "putting out" for Benjamin Coal Company near Ansonville, Pa. — a Model 4500 dragline with 6 yard bucket and 120′ boom strips from topside — in the pit a versatile 1¼ yard Model 2000 shovel covers a lot of ground, loading, cleaning and preparing — and in the background, a Model 3500 Hi-Lift shovel strips overburden at a record rate.

Look into Manitowoc's superiority — check such outstanding features as: faster working cycles, faster travel speeds, long reaching booms, top stability and simple but sturdy design and construction.

These are just some of the reasons why you see more and more Manitowocs on more and more stripping and mining operations. Send for details. Manitowoc Engineering Corp., Manitowoc, Wis.

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LEVELING JACKS **AUGER LIFT** **MOVING JACKS**

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Let us check your property to recommend the right McCarthy Coal Recovery Drill for maximum tonnage at lowest cost. Send for Bul. M-101. The Salem Tool Company, Salem, Ohio.

THE SALEM TOOL COMPANY SALEM SALEM, OHIO, U.S.A.

MODEL 6-30-36 x 6 McCARTHY COAL RECOVERY DRILL with G.M.C. 4-cylinder diesel engine, FAU Cotta transmission, 14" Rockford Clutch, speed reducer and box-type main frame and engine base. Sizes available for using 20, 24, 30, 36 and 42" diameter augers.

THE SALEM TOOL COMPANY

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Vol. ~~XXXII~~ XXXIV September, 1955 No. 9

Contents

Do You Know 11

Here and There in the Coal Industry 11

Hitchman Coal Company Keeps Pace 12

Indiana Open Pit Mining Association Meets 18

Weighing Coal on Conveyor 22

Your New Equipment Department 26

Advertisers' Index 35

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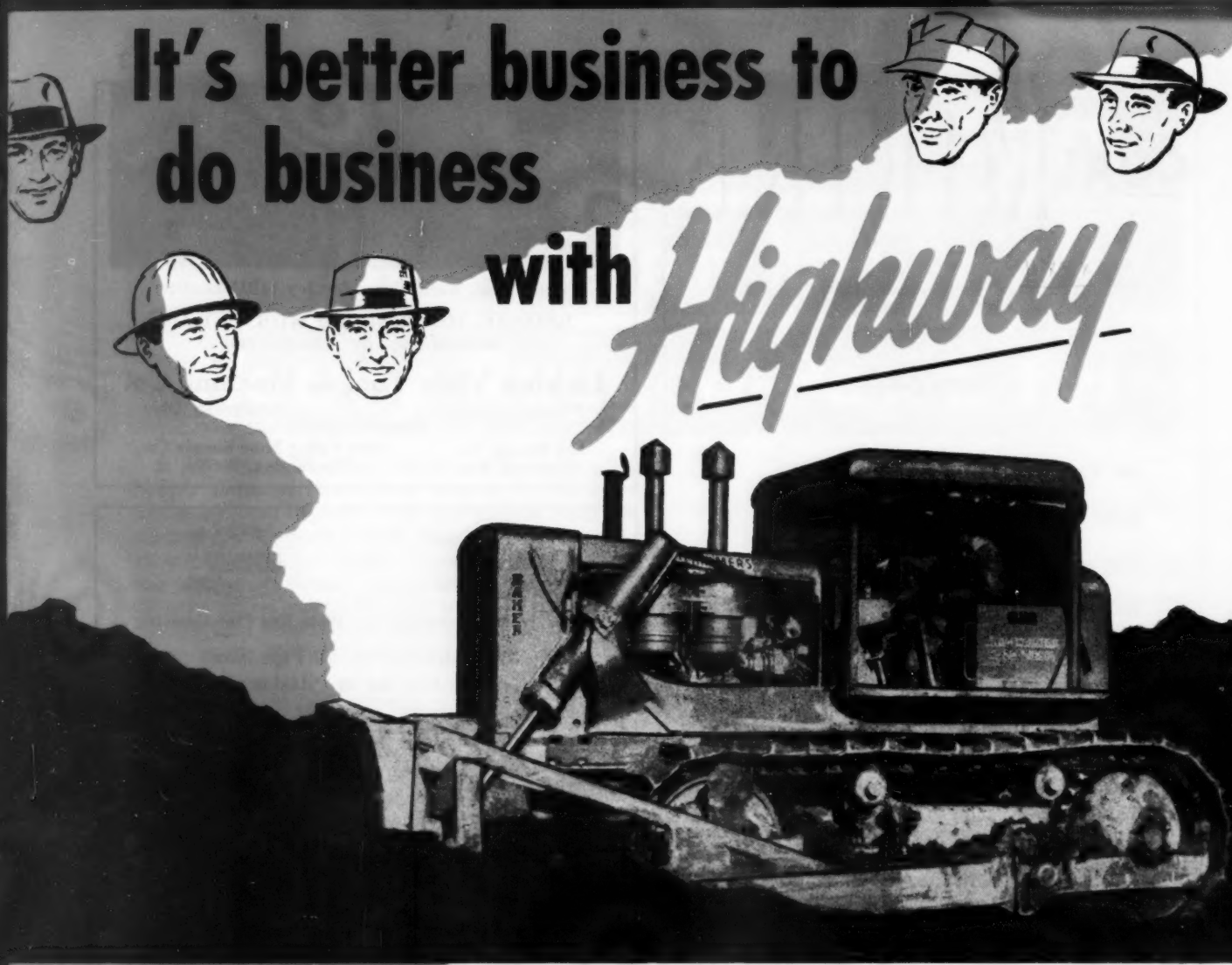

Allis-Chalmers HD-21 . . . PERRY ROSS COAL CO., Slippery Rock

Lima 2400 Shovel . . . COAL RIVER MINING CO., West Milford

Ask any mine operator why he prefers to do business with Highway.

He'll tell you that Highway's combination of the world's best equipment lines . . . plus 'round-the-clock service . . . plus Highway's unconditional guarantee of quality just can't be beat.

. . . in fact, we'd like to suggest:— it might pay you to also do business with Highway!

AA-772

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No. 955 and No. 933

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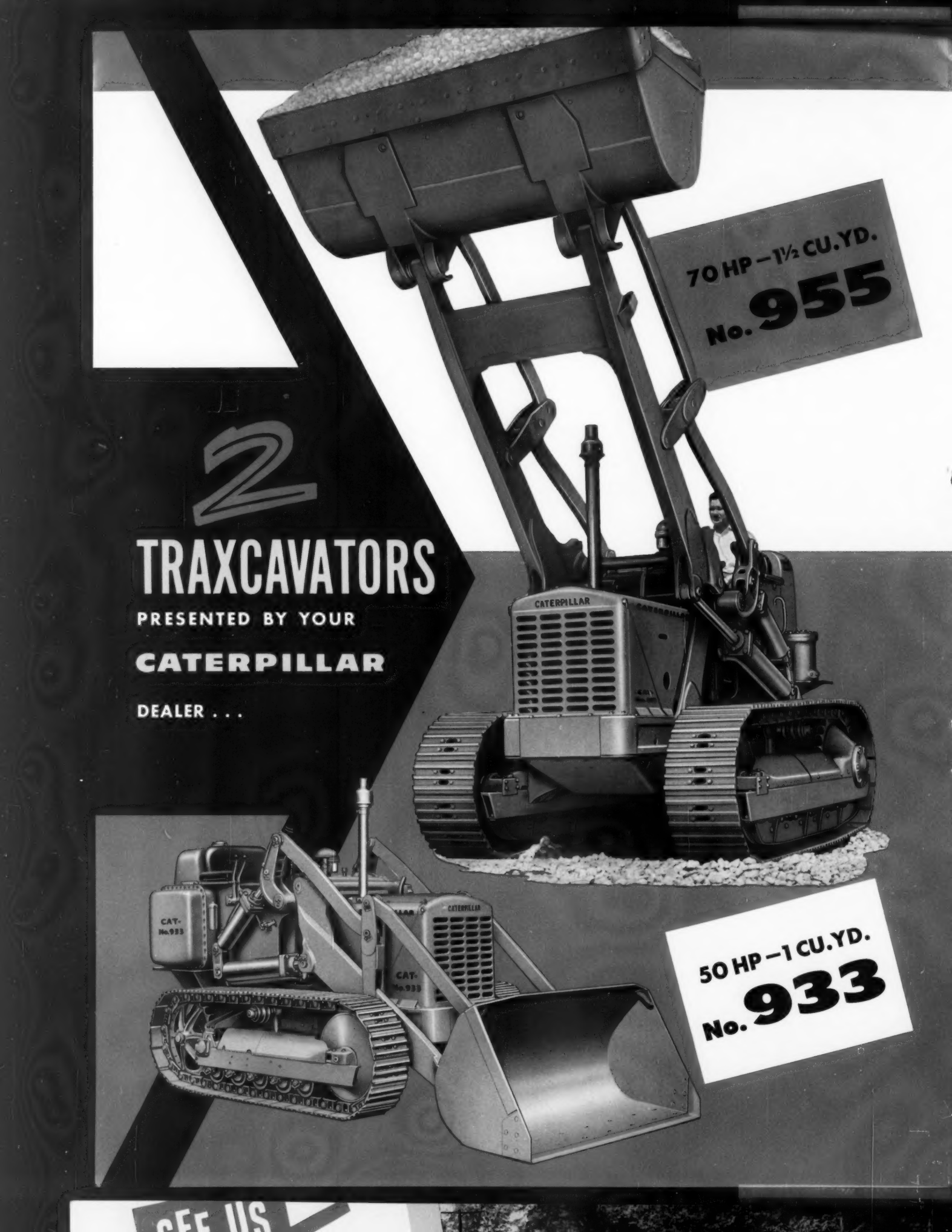
go into ACTION!


2
TRAXCAVATORS
PRESENTED BY YOUR
CATERPILLAR
DEALER . . .
70 HP — 1½ CU. YD.
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50 HP — 1 CU. YD.
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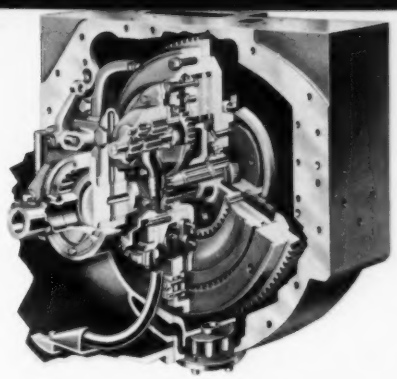
SEE US

Take another look at the Cat-built Traxcavator on the front cover before you read another word. Take another look at the action that's setting new standards for performance and long life in material handlers. Then put the No. 955 and No. 933 Traxcavators into action on your own job. *You'll see big loading action* from the 40° tip-back bucket; *smoother, longer-lasting clutch action* from Caterpillar's exclusive oil clutch; and *quicker spotting, loading and dumping action* from high-seat visibility. Notice, too, that these pace setters have high dumping reaches . . . easy accessibility of hydraulic system filter . . . and many other exclusive Cat features. Put all this action and all these Caterpillar benefits to work for you . . . moving more yards quicker, at lower cost. See the No. 955 and No. 933 Traxcavators at our headquarters, soon.

WITH THESE
LONG LIFE, BIG PRODUCTION
FEATURES

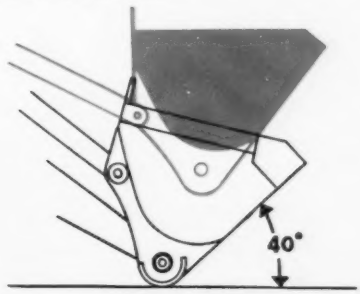
PLUS THESE EXTRA-VALUE COMPONENTS

- **EFFICIENT, EASY-TO-SERVICE HYDRAULIC SYSTEM**
  Vane type pump lasts longer. Operating valves protected against damage and dirt. Big, powerful lift and dump cylinders up high out of dust. Full-flow filter housing is conveniently located for easy replacement of element.
- **BOX-TYPE BRACE**
  Found only in Cat-built Traxcavators, it prevents "bucket sway" and "bucket corner drooping."
- **3-GROUSER TRACK SHOE**
  Gives better flotation, traction, resistance to side slippage, yet does not tear up hard, permanent floors.
- **REVERSIBLE RADIATOR CORE**
  Doubles the life of radiator core. Inner and outer surfaces may be reversed if one side of fins and tubes becomes worn.
- **CLEAN BUCKET**
  Inside is free of obstructions for fast loading, clean dumping. Hardfaced hinge brackets save bottom of bucket.
- **BUCKET POSITION INDICATOR**
  Provides quick, accurate gauge of bucket position.
- **BUCKET BUMP**
  For quick release of sticky material.
- **HIGH DUMPING REACH**
  Higher than any comparable machine. 128" on No. 955 and 118½" on No. 933.
- **DECK STARTING**
  Independent gasoline engine with 6-volt electric starting or direct 24-volt electric starting available for both machines. Either is started from operator's seat.



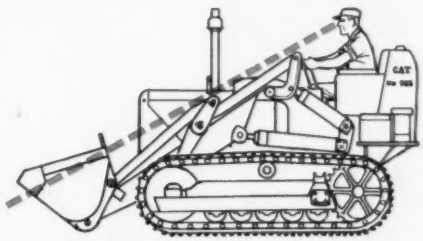
EXCLUSIVE, LONG LIFE OIL CLUTCH

No earthmoving machine takes as much clutch punishment as the materials handler. So, Caterpillar's exclusive oil clutch, proved to last up to 5 times longer in larger Cat-built machines, has been built into No. 955 and No. 933 Traxcavators. The oil clutch stands up to the repeated shifting required in material handling *because a pillow of cooled oil cushions the contact between clutch plates.* Initial friction is greatly reduced. Shifts are easier, smoother. And the Caterpillar oil clutch requires less maintenance, fewer adjustments.



FULL-LOAD 40° TIP-BACK BUCKET

Even in loose materials, the excellent tip-back design of the No. 955 and No. 933 bucket permits greater load retention throughout the entire lifting and dumping cycle. At ground level, the bucket tips back to 40°, assuring maximum load, and swings into a horizontal carrying position when just 18 inches off the ground. The power of the No. 955's (70 HP) and No. 933's (50 HP) Cat-built Diesel Engines, combined with this tip-back feature, provide superior "break-out" force when digging hard or frozen ground. Power is also sufficient to "bury" the bucket in the stockpile for full, heaping loads.



HIGH-SEAT VISIBILITY

Put yourself in the operator's seat of the No. 955 or No. 933 Traxcavators and you'll see why these machines outproduce, outperform all similar-sized and even larger-sized materials handlers. Comfortable foam rubber seat is much higher, putting the operator up out of the dust. He looks directly to bucket area . . . sees both sides of the bucket at the same time. All controls are within easy reach, including bucket controls . . . controls may be operated with one hand.

CATERPILLAR

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SEE US

TO SEE HOW

No. 955 and No. 933 TRAXCAVATORS

PAY OFF WITH ACTION ON YOUR JOB

Whether you move earth, gravel, rock or bulk materials of any kind, either the No. 955 or No. 933 Traxcavators, or both, should be included in your fleet. We, your Caterpillar Dealer, by thorough analysis of your needs, can recommend the most efficient, most economical machine for you to own. We'll be glad to arrange for a demonstration . . . to show you every cost-cutting feature in action! Call us today!

YOU ALWAYS GET ACTION FROM YOUR CATERPILLAR DEALER

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CARDOX AUGERMINER
salvages high-profit tonnage "lost" under excessive overburden
Nets up to 50 tons per man shift.
Drills back 100 feet or more into already exposed seam.
Produces coal ready for mechanical loading, practically free of rock and shale.
Gasoline or diesel engines, 155 H.P., handle augers that drill holes up to 38 inches in diameter.

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Austin Overshot Loaders dig, screen and load in one low-cost operation

With a grizzly screen attachment, the Austin Loader can dig, screen and load pit run gravel into trucks ready for spreading on roads without additional screening.

The Austin scoops up as much as 4 cubic yards of gravel—then, as the Loader raises overhead and dumps, correctly sized material drop through the screen into the truck. Oversize drops off the screen, beyond the truck. Austins also screen and load riprap, coal and similar coarse materials quickly and economically.

Increase your production . . . cut your labor costs and eliminate the need for separate screening equipment . . . use Austin Overshot Loaders to screen and load material on your operation. Or, use the versatile Austin to load trucks, wagons or rail cars—to mix or stockpile—to excavate or bulldoze—to load logs.

Austin Overshot Loaders are available in 5 models for installation on Caterpillar D2, D4, D6, D7 and D8 Tractors. Bucket capacities from 1 to 4 cubic yards. AA-1524

Ask your Caterpillar—Austin Dealer for a demonstration

Model 6-C Austin Overshot Loader with grizzly screen loading pit run gravel

AUSTIN DIVISION

Central Ohio Steel Products Company

Galion, Ohio • Denver, Colorado

Here and There in the Coal Industry

● GREGORY S. DEVINE, well-known in the coal industry for many years, became a vice president of Southern Coal Co., Inc., Chicago, on August 1. An announcement by T. L. Kelce, executive vice president, said Mr. DeVine's duties will be in connection with general sales and administrative work. Mr. DeVine resigned recently as vice president and director of Truax-Traer Coal Co., with which company he became associated in 1933, following acquisition by that company of Binkley Coal Co. Mr. DeVine had served as president of Binkley. He is president of St. Louis Coal Sales, Inc.; a director of the Illinois Coal Traffic Bureau, the Northern Illinois Coal Traffic Bureau, the Rail to Water Transfer Corp., and a director and member of the executive committee of American Coal Sales Association.

* * *

● THREE COAL INDUSTRY REPRESENTATIVES are among forty-one outstanding business and civic leaders who have been appointed members of the Natural Resources Committee of the Chamber of Commerce of the United States for 1955-56. They are George E. Enos, Jr., executive vice president, The Enos Coal Mining Co., Cleveland; David L. Francis, president, Princess Elkhorn Coal Co., Huntington; and George A. Lamb, manager, Business Surveys, Pittsburgh Consolidation Coal Co., Inc., Pittsburgh. The Committee helps to keep the Chamber informed on developments and trends affecting natural resources and makes recommendations on policy matters.

* * *

● PEABODY DIRECTORS ELECT GRESSENS AND KELCE. Directors of Peabody Coal Co., which was recently consolidated with the Sinclair-Southern group of coal companies, have elected Otto Gressens, Peabody president, to serve as chairman of the board. L. Russell Kelce, president of Sinclair Coal Co., was elected president of the consolidated company.

Do You Know . . . . .

○ The new Military Reserve bill passed by Congress goes a long way in solving the nation's scientific manpower problem.

Provided in the bill are the means to protect and best utilize the nation's specialists in both peacetime and wartime. Experts here have called it a good compromise between the two opposing groups that have bitterly fought over the problem of what to do with scientists and engineers in the modern, technological world.

One group has held that what is good for one is good for all and has called for the drafting of every able-bodied man without regard to his specialized training in civilian life. The other has held that specialists are needed at the homefront to insure the national defense and they must all be exempt.

Under the provisions of the new bill, a young scientist who has completed his education and started work, can ask permission to be reclassified and then enlist for from three to six months of active duty and then be transferred to the Ready Reserve for seven and one-half years of night and summer training. Under the old law, this same specialist was drafted for two years of active duty.

The scientist or engineer under the new bill is also protected once he has been placed in the Ready Reserve, which can be mobilized by the President in time of emergency, such as the Korean conflict. The Congress has set it up so that the military must screen the Ready Reserve and either utilize the number of specialists or shift them to the Standby Reserve, the unorganized and second line reserve. The military is also accountable to the President in this screening process so that there is no excess of critical personnel in the Ready Reserve.

Whether the young scientist or engineer can qualify for the shortened active duty status is up to the President, represented by the Office of Defense Mobilization and the Department of Defense.

Experts here state that both government agencies see the need for protecting specialists to maintain technological supremacy and are encouraged by the spirit in which the Congress tackled the manpower problem.

They say that the Congress was practically unanimous in recognizing that in today's world, the problem of scientific manpower must be met, and although the bill is not the most ideal, it has provided the framework for proper handling by the administration.

* * *

● A new signaling system for telephone dialing, so fast that it may do away with the dial itself, has been developed by Bell Telephone Laboratories in New York.

The new device, called a polytonic coder, sends out digits just about as fast as they can be theoretically packed into a line. A test model of the signaler can send 100 digits a second reliably over almost all telephone connections.

To take advantage of the device's speed, the present dialing system would have to be replaced, perhaps by a push-button system. You would punch out your party's number on buttons on the phone's base while the receiver is still on the hook. As soon as you pick up the receiver, your party's phone will start ringing. If the line is busy, you need not dial the number over again. The button setting will remain until you change it. All you have to do is pick up the phone again to reach the same party a second time.

Dials now found on most phones are too slow for the new signaler. It takes up to 12 seconds to dial a seven-digit phone number, almost all wasted time, in addition to a delay while the signal makes the connection.

Results of laboratory tests with the signaling system were so encouraging, Dr. C. A. Lovell, J. H. McGuigan and O. J. Murphy of the Bell Telephone Laboratories reported, that arrangements were made to try it out on New York circuits.

The tests showed the polytonic signal could be used on all except an insignificant number of the telephone connections in this country, Dr. Lovell announced.

Need for a signaling system for the future significantly faster than today's dial spurred development of the new method. The term "polytonic" was coined because the system uses five separate frequencies. Each digit is represented by a different two-tone combination. The device is based on a new mathematical concept of electronic coding.

Today's dial system depends on timing. The time it takes for the wheel to come to rest determines the digit sent over the lines to the central connecting office. If you get impatient and try to force the dial around faster than it would go naturally, you might get a wrong number.

But there would be no impatient dialers if the new system is adopted. It can transmit digits many times faster than any human can send them. To make efficient use of the device's speed, the telephone number would have to be set up first on the phone and sent out after the setting has been completed.

HITCHMAN COAL COMPANY

KEEPS PACE WITH MODERN STRIP MINING

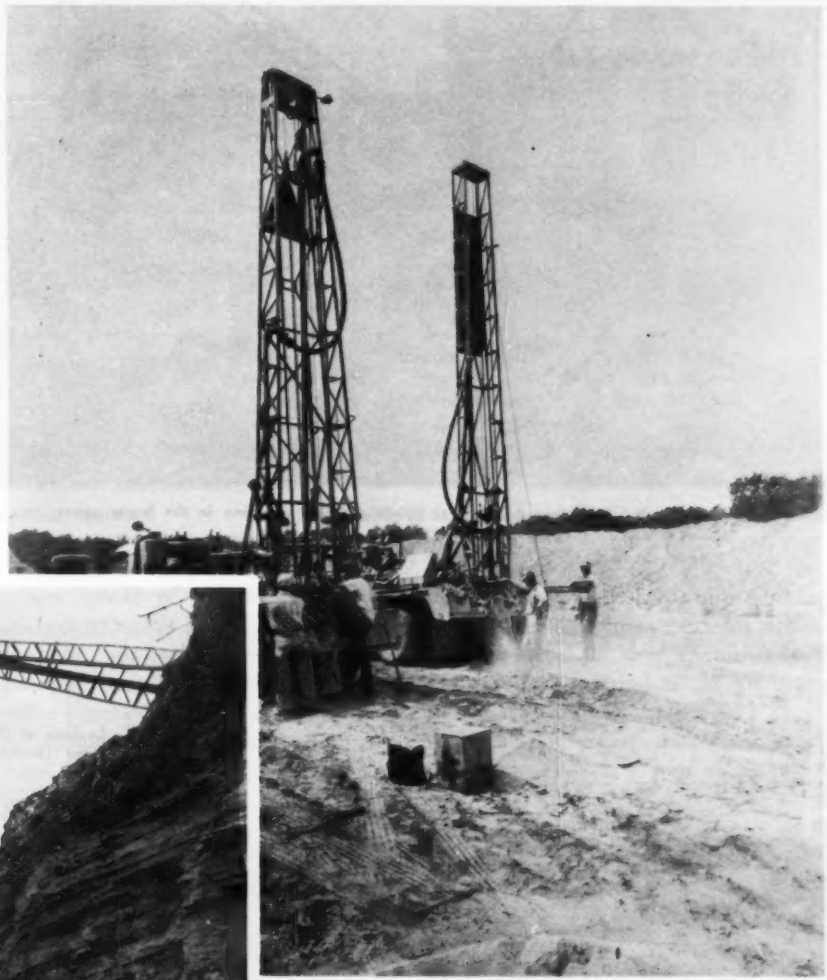
IN Pennsylvania

The Marion 5323 electric shovel moving overburden in the high cover area at the Pennsylvania operation.

Starting to strip coal back in 1917, the owners of the Hitchman Coal and Coke Company have always paced the industry by the use of the latest stripping machinery.

A minority not the majority of us create truth and new concepts. We'll have progress as long as the majority permits the learned minority to pursue ideas born of the superior mind wherever it may lead. We can see that a search for truth is conducted along reasonably scientific lines for scientific investigation has helped the progress of our civilization by pointing out weak spots and suggesting remedies. Powers acquired over the forces of nature made it possible to increase our mental training and standard of comfort.

Man has always observed, wondered, thought, explored and asked questions. About the 17th century



Rotary earth shot hole drills working in tandem in the higher cover area at the Pennsylvania operation.

Novel way of dropping electric power cable into the pit to feed the electric shovel at the Pennsylvania operation.

The Monaghan Model 200-W dragline stripping in the lower cover area at the Pennsylvania operation.

Looking at the coal loading operation from the highwall. The large electric shovel can be seen in the right foreground.

The Jeffrey coal washing plant at the Pennsylvania operation.

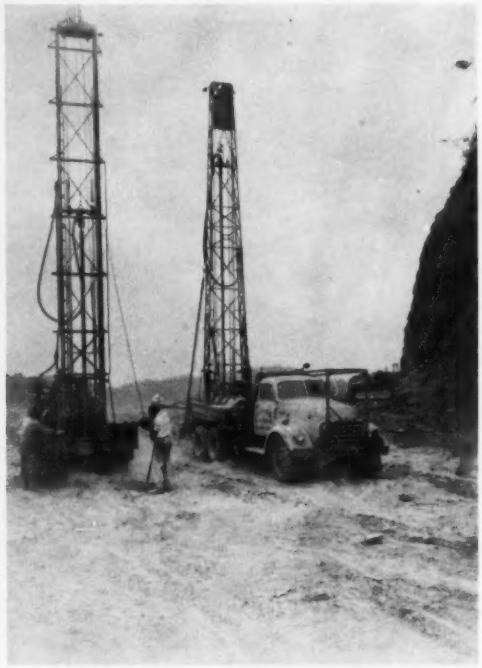
The Caterpillar D-8 tractor backfilling at the Pennsylvania operation.

The International TD-24 Tractor backfilling at the Pennsylvania operation.

he began to realize that by observing and analyzing it could be seen that nature behaved in a regular manner and that the regularities could be reduced to mathematical formula and used to predict future events. As these new concepts were pursued, a new world of understanding was opened to man's mind. Through this kind of intellectual struggle, truth emerged, resulting in man being remade physically and socially. Inquiring scholars have sought new knowledge, new understanding to produce things man needed to improve his health, his happiness and his security. We need to have inquiring and active minds around us at all times to direct attention to difficult problems and to help us make better use of knowledge that can yield much

A view of some of the backfilled area at the Pennsylvania operation.

The Model 725 Page dragline stripping at the W. Virginia operation near Clarksburg.



Two rotary drills working in tandem ahead of the Page dragline at the West Virginia operation near Clarksburg.

to make man better and happier.

It is up to us to find mining men who have been successful in getting needed new ideas. It is up to us to keep these men in touch with other good men to allow a maximum interchange of ideas for only out of such interchange of ideas can our problems be solved. It is up to us to provide those men with proper facilities for advancing and developing their new thought by keeping the environment and atmosphere that will induce maximum thought with the least frustration.

The Tasa Coal Company, owner of the Hitchman Coal & Coke Company is one of the oldest and best coal stripping companies in the business, having started to strip coal in the Burgettstown, Pennsylvania area in 1917. The company then organized the Hopedale Coal Company with operations at Hopedale, Ohio, which was an outstanding strip in Ohio at that time. It later moved to Zelienople, Pennsylvania and operated from there in the Northwestern Pennsylvania coal deposits as well as in Ohio and Northern West Virginia. It is now carrying on one operation at Wesley, Pennsylvania and two in West Virginia.

At the Wesley, Pennsylvania operation the Brookville seam of coal is being stripped which averages 42 inches in thickness, on the extreme northwestern end of that seam. Unlike the overburden on that seam of coal in the adjacent area which is glacial refuse and does not need to be drilled and shot for stripping, the

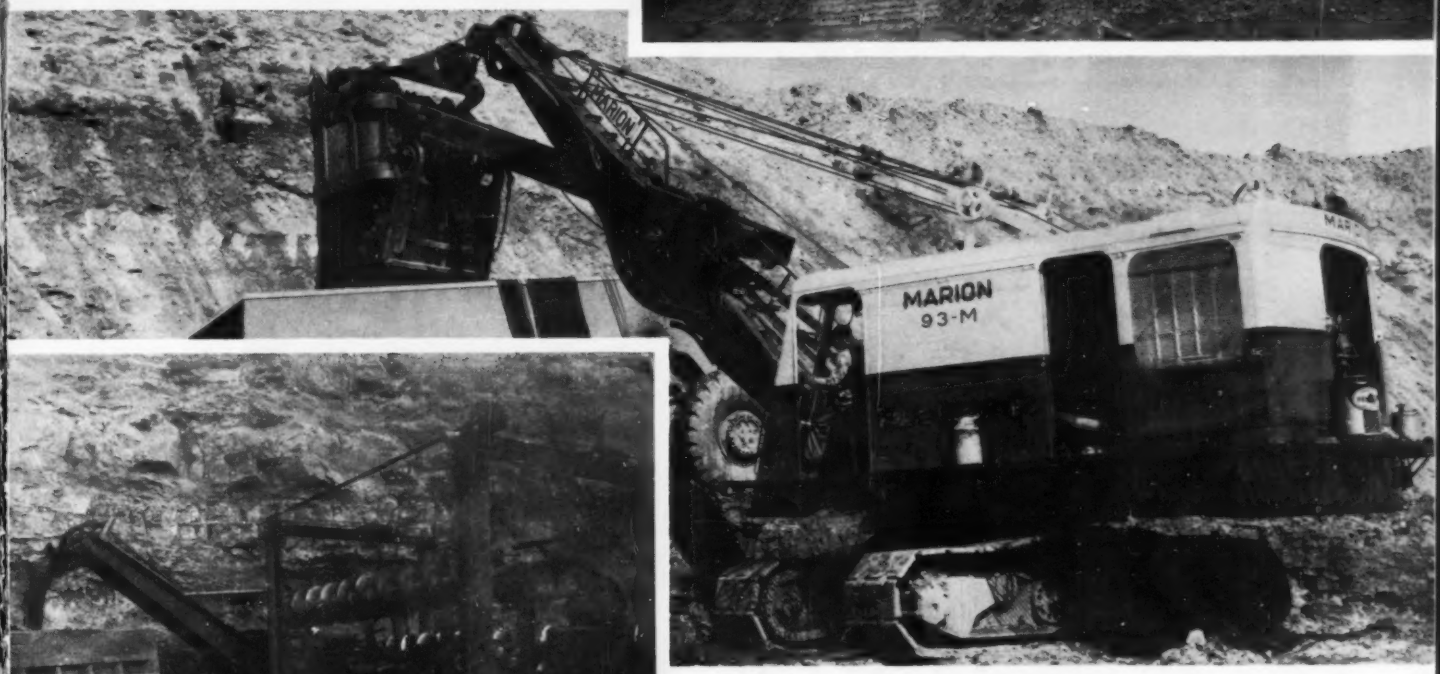
Looking down on one of the Compton Highwall Auger in pit at the West Virginia operation near Clarksburg.

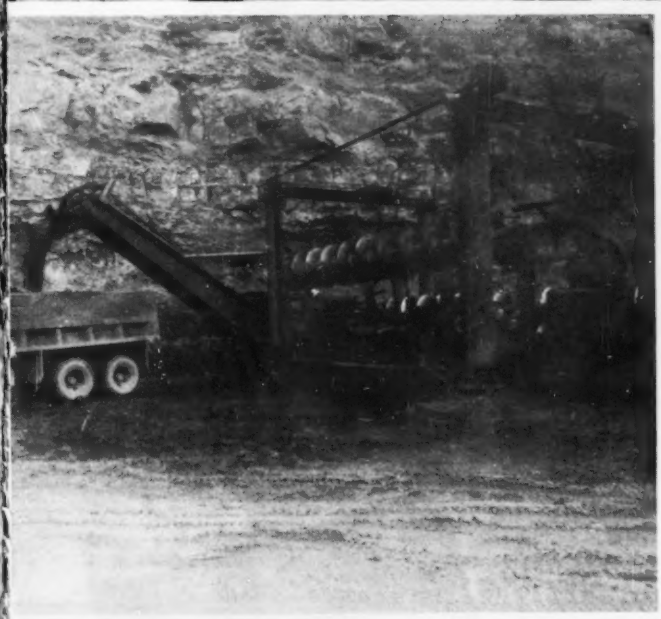
coal on the Hitchman property is overlaid with a sandstone that must be drilled and blasted for the stripping shovel. In the adjacent area the coal is reached by boxcut and all pit water must be pumped out of the

(Continued on Page 27)

The Lima Model 2400 shovel working at the West Virginia operation near Clarksburg.

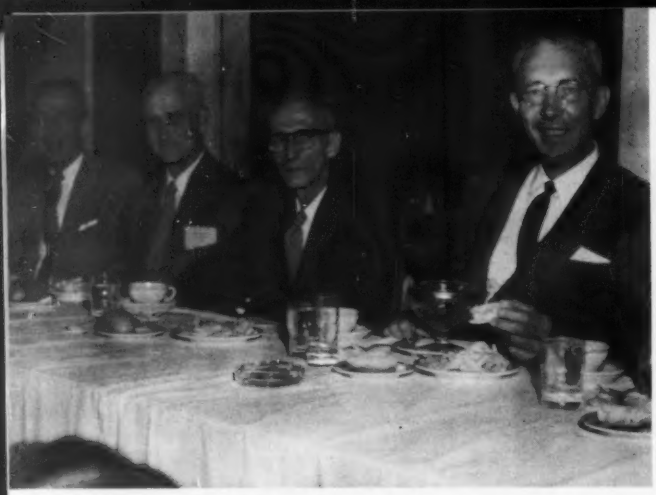
Marion Model 93-M loading out coal at the West Virginia Operation.





Close-up view of the second Compton Auger working in highwall.

Backfilled area at the West Virginia operation.



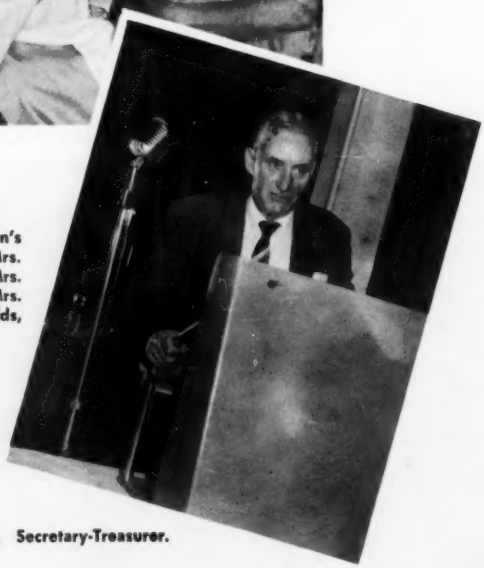
Fred W. Kirby, National Electric Coil Co.; J. C. Rettenmayer, United Electric Coal Co.; Charles Bledsoe, Stoneford Corp., and E. T. Groat, General Electric Co.

Harold A. Bolz, Assoc. Dean, College of Engineering, Ohio State University; J. F. Weiss, Chief Electrical Engnr., Marion Power Shovel Co.; C. E. Plass, Electrical Sales Engnr., American Steel & Wire Corp.; Howard S. Nunn, Chief Electrician, Ken Coal Co.

INDIANA OPEN PIT MINING ASSOCIATION MEETS . . .

This is the committee for the women's affairs. Left: Mrs. J. C. Rettenmayer, Mrs. Luther A. Selleg, Mrs. Bailey Price, Mrs. E. E. Gaston, Mrs. R. M. Leseney, Mrs. Fred W. Kirby, Mrs. George J. Reynolds, Mrs. Charles Bledsoe.

Mr. J. F. Weis, Chief Electrical Engineer for the Marion Power Shovel Co.,



L. E. Briscoe, Secretary-Treasurer.

Left: R. W. Leseney, Truax-Traer Coal Co. Royal S. Buchanan and L. A. Selleg, Westinghouse Corp.; Chas. A. Osbourne, Sunlight Coal Co.

Bailey E. Price, National Electric Coil Co.; G. J. Reynolds, United States Gypsum Co.; Chas. E. Crawford, Midland Electric Coal Corp.; H. Davis, Assoc. Editor, "Coal Age."

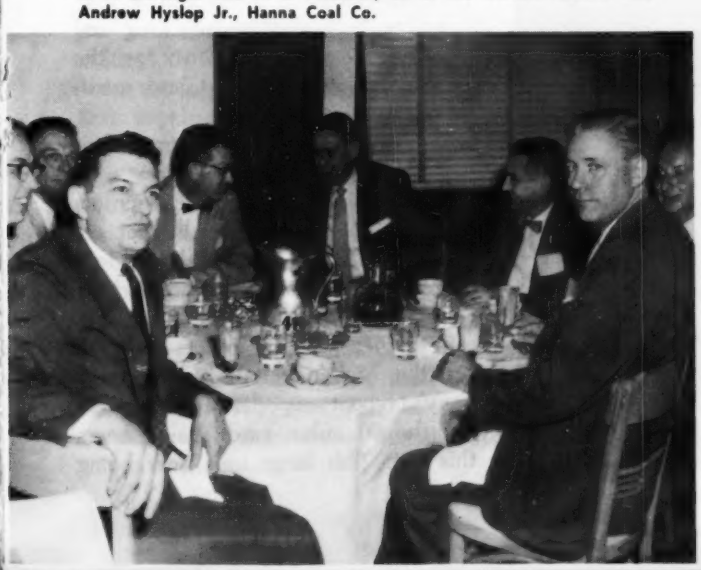
The Indiana Open Pit Electrical Mining Association held its annual meeting at the Ohio State University, Columbus, Ohio. This group of coal men holds its meetings at Universities and colleges in various states throughout the nation. Many of these coal men bring their wives, some make this meeting their annual vacation.

The featured discussion of this meeting was the need for a change to higher voltage distribution in coal stripping.

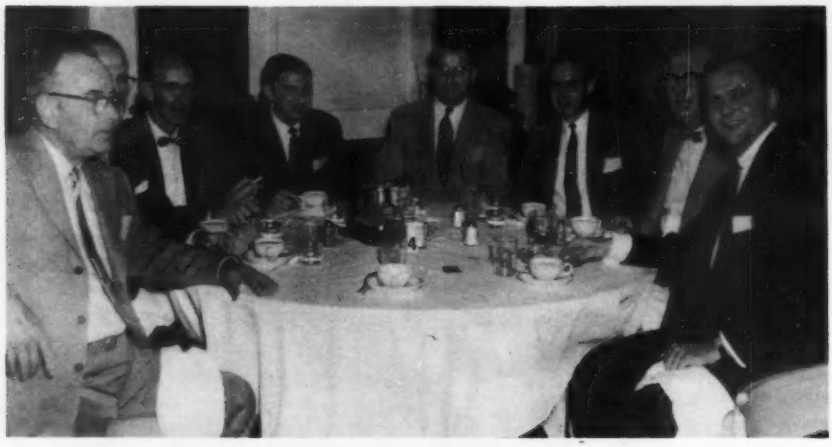
Mr. J. F. Weis, Chief Electrical Engineer for the Marion Power Shovel presented a paper which discussed his view points with reference to higher distribution of voltages for strip mine operation. Mr. Weis' paper follows:

Paul Prokup and Walter Mitchell, Electricians for the Midland Electric Coal Corp.; Bill Strickland and Jim Cook of the Westinghouse Electric Corp.; R. W. Bergmann, Asst. Elec. Engr., Marion Power Shovel Co.; W. R. Lovering, Sales Engr., Westinghouse Electric Corp.

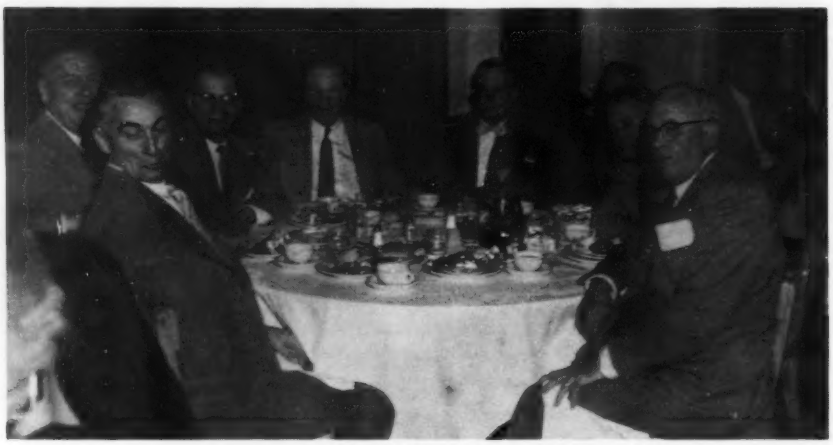
Left: E. J. Wolf, H. P. Lewis, O. E. Holzer, Lin Young, W. P. Swanson, E. D. Elwonger and H. E. Swenson, all of the General Electric Co.; Andrew Hyslop Jr., Hanna Coal Co.



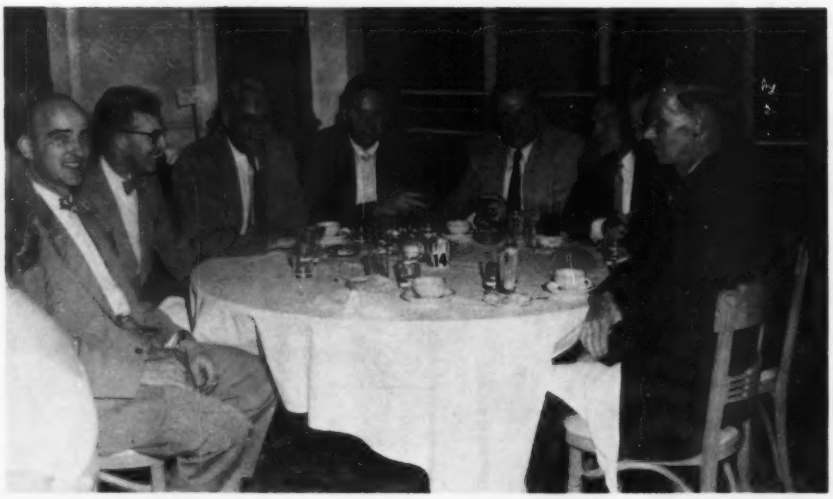
Chas. Steffen, Bucyrus-Erie Co. R. T. Taylor, Sinclair Coal Co.; Kenneth Goldman, Chief Electrician, Sherwood-Templeton Coal Co.; M. A. Austin, Westinghouse Corp.; Jos. Thiel, Bucyrus-Erie Co.; R. G. Gehlson, Joy Mfg. Co.; H. Coen, Westinghouse Corp.; J. S. Scaff, Industrial Generating Co.



Chas. H. Evans, Ayrshire Coal Corp.; J. W. Hume, General Electric Co.; T. E. Davis, Stoneford Corp.; T. J. Pandak, and T. D. Bogan, J. A. Roebling's Sons Corp.; U. D. Burk, American Steel & Wire Corp.; Herbert Jones, Ayrshire Coal Corp.; R. G. Russel, National Carbon Co.



Bill Beatty, National Electric Coil Co.; Wayne Meadows, Snyder Mining Co., John L. Coon, Southwest Illinois Coal Corp.; E. G. Young, Ralph B. Bennett, G. D. Kalberg and G. V. Sessen, all of the General Electric Co.



D. C. Swager, F. C. Kreitler, P. F. Tribswether, H. W. Simmerlink, R. G. Rettig, H. Bongarten, R. M. McElwee, with the General Electric Co., and Frank Wallace, Sahara Coal Co.

APPLICATION OF HIGHER VOLTAGE TO EXCAVATING MACHINERY

It is an honor and privilege to make a few comments.

I want to compliment Mr. Stoetzel on his very fine paper that you have just heard. He covered the subject clearly and concisely in his usual excellent manner.

To me higher distribution voltages for strip mine operation is simply another progressive step as part of a large movement to make strip mining more efficient and profitable under continual increasing costs. Larger machines are required to remove the deeper overburden and keep the costs within reason. The higher voltages we are discussing is one the necessary changes in order to satisfactorily operate such mammoth machines.

When we examine the various problems involved in applying higher voltages to the larger stripping shovels, we find they are not too difficult; at least when not exceeding 3900 volts.

Listing the different components involved on a shovel or dragline to bring power on board we have:

1. The cable reel with its collector rings.
2. The lower frame switching equipment and transformers.
3. The main high voltage collector ring between the lower and upper frame.
4. The high voltage switching and starting equipment for the motor generator set and auxiliaries.
5. The auxiliary transformers for the upper frame.
6. Finally, the high voltage motors on the motor generator set.

From this list it is fairly evident there are no major difficulties as long as sufficient space is availabe to obtain the necessary clearances required for the higher voltages. Our company's recent experience in designing the 60 cubic yard shovel bears this out. This large unit now being

manufactured by Marion will be the first large stripping shovel to operate on 6900 volts.

The high voltage collector ring assemblies for both cable reel and between the frames can be very much like the lower voltage assemblies. The cross sectional area of the metal rings as well as the brushes simply must be of sufficient size to handle the current. The insulation between the rings and brushes must be thick enough to give the necessary protection for the higher voltage. More distance is required for spacing and clearances in order to obtain additional factor of safety.

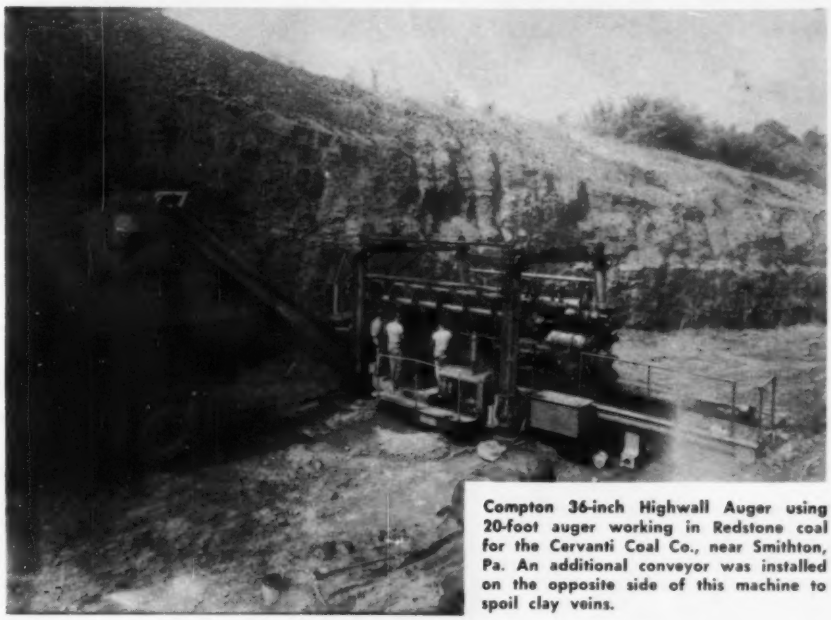
As to the transformers and switching equipment, very dependable equipment of this type suitable for 6900 volts has been available for years. Here as in other cases, it simply is a question of space for insulation and safe clearances.

The main A.C. motors of the motor generator set or sets offer no serious problem since they are physically large enough to be made suitable for 6900 volt power supply.

On the smaller machines, such as the coal loaders where the A.C. motors are smaller and space is at a premium, the higher voltages present more problems. These problems, of course, can be overcome just as they were in the early days when we went from 440 volts to 2300 and then to 4000 volts. For the time being, however, and until the demand warrants, the coal loaders will operate on 4000 volts as they do today. This will simply mean suitable transformers to reduce the stripping shovel voltage to the coal loader voltage.

In my opinion the immediate future requirements for large stripping shovels indicate 6900 volt distribution systems rather than a higher voltage. The 6900 volt system is the next logical step and I believe will become fairly common-place for this purpose in the next 10 to 15 years.

From a shovel manufacturer's viewpoint we do not feel that any of the problems associated with the higher voltage system will be any more serious than those that have arisen in the past.



Compton 36-inch Highwall Auger using 20-foot auger working in Redstone coal for the Cervanti Coal Co., near Smithton, Pa. An additional conveyor was installed on the opposite side of this machine to spoil clay veins.

McCarthy shot hole drill working at the Bridgeview Coal Co., Gans, Pennsylvania.

Caterpillar D-9 Tractor pushing top layer of overburden at the operation of the Bridgeview Coal Co., Gans, Pennsylvania.

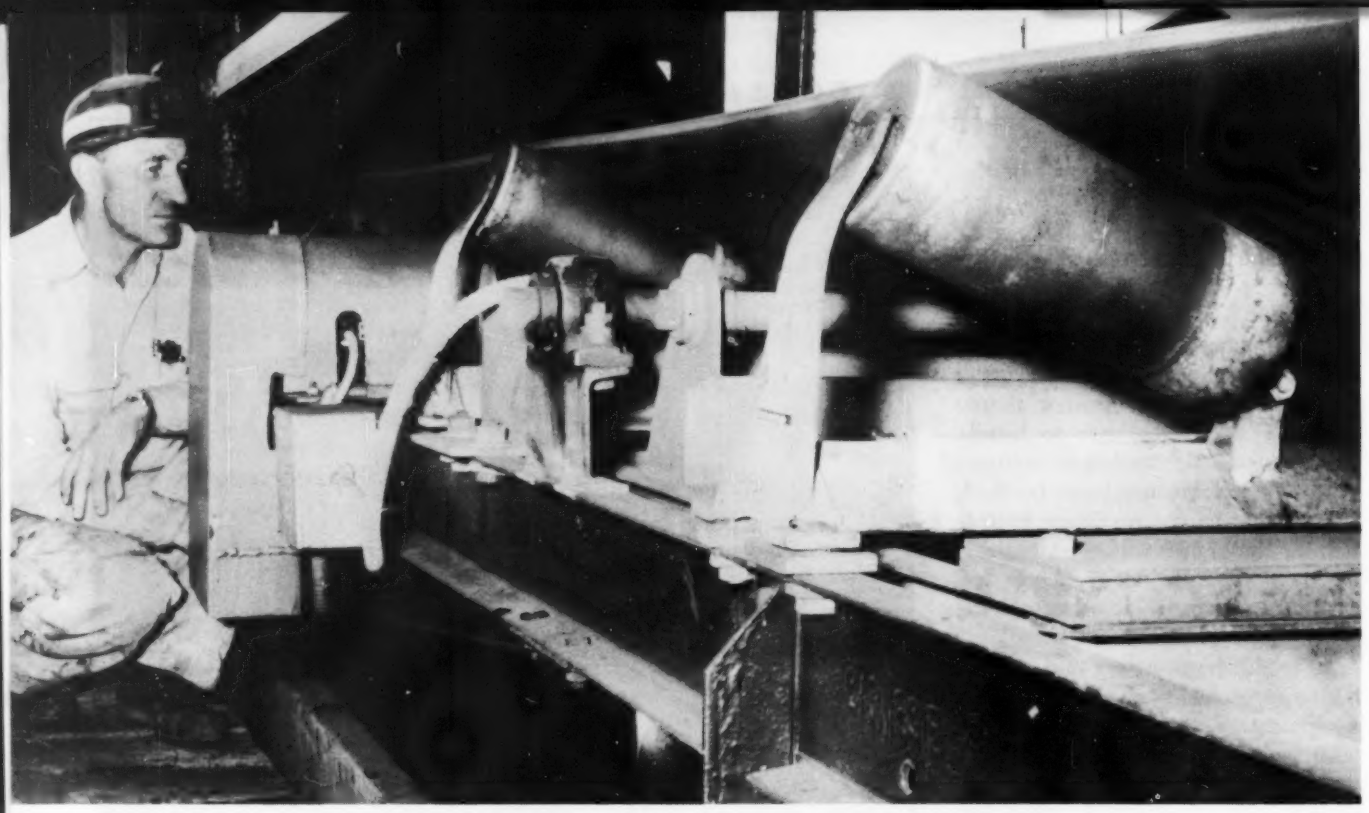


FIG. 1—Coal is weighed continuously by a new electrical method while moving on a conveyor belt to river barges at the Alexander mine of The Valley Camp Coal Company, Moundsville, W. Va. A floating roller, which is mounted on a counterbalanced carriage behind its supporting pivot shaft, is restrained by the weighing device from vertical movement induced by coal on the belt. A tachometer generator, enclosed at left, is driven by the returning belt and supplies a voltage that is proportional to belt speed, to an SR-4 strain gage bridge circuit which is incorporated in a Baldwin-Lima-Hamilton SR-4 load cell. This cell is located under the center of the loaded belt beyond the pivot shaft and can be seen in Fig. 2 from the other side of the conveyor.

WEIGHING COAL ON CONVEYOR

FIG 2—A Baldwin-lima-Hamilton SR-4 Load Cell of 300 lb. capacity, suspended from a cross-member on the conveyor frame under the belt, takes tensional loads from a floating roller (right) and transmits weight signals electrically to a recording instrument in the mine office.

Continuous electrical weighing of coal on a conveyor belt between the tipple and river barges on the Ohio River at The Valley Camp Coal Company's mine at Moundsville, W. Va., has simplified measurements of coal shipments and mine production. In addition the new method is giving the company's customers greater reliance on bills of lading than those determined by water displacement of barges.

Electrical belt metering provides for transmission of weight measurements to an instrument in the mine office with a large dial indicator showing instantaneous rates of flow of coal on the belt in tons per hour, a continuous circular chart record of flow rates, and a total count of tonnage carried on the belt to barges. The difference between reading of the totalizer before and after loading a barge give weights ranging from 800 to 1200 tons of coal depending on barge size. Another totalizing counter at the operator's position on the dock adds to the convenience of the new weighing method.

Although barge lading can be determined by means of water displacement charts within close limits by a skilled gager, this method is subject to greater error when the river is ruffled by wind and waves. The method is still being used, however, as a check on the electrical weighing method and to maintain a stand-by method. Determinations by the two methods are said to differ usually by less than five tons.

Heart of the new electrical weighing system is an SR-4 load cell of 300-lb. capacity supplied by Baldwin-Lima-Hamilton Corporation, Philadelphia. The system was devised and developed by Stanley D. Hartshorn, Trans-Weigh Company, Wayne, Pa. A counterbalanced weighing carriage is supported under the belt by a pivot shaft. On one end of the carriage is a floating roller and on the other end a counterweight. Downward movement of the floating roller is restrained by the load cell which is placed in a sheltered position under the center of the belt so that it takes the load on the carriage in tension. There is no perceptible deflection or displacement of the carriage under load. The electrical resistances of a bridge circuit of resistance wire strain gages on the stressed member in the Baldwin load cell are changed with changes in the weight of coal passing on the belt.

Belt speed enters into the continuous weighing by means of an electric tachometer generator which is driven by the return side of the belt. It generates a voltage that is proportional to belt speed and applies it on the Wheatstone bridge circuit in the load cell so that its output voltage is proportional to the product of belt speed and the instantaneous weight of coal on the belt. This voltage is amplified electronically and measured by an automatically null-balanced potentiometer type recording instrument which gives the instantaneous rates of flow of coal and incorporates a special integrator

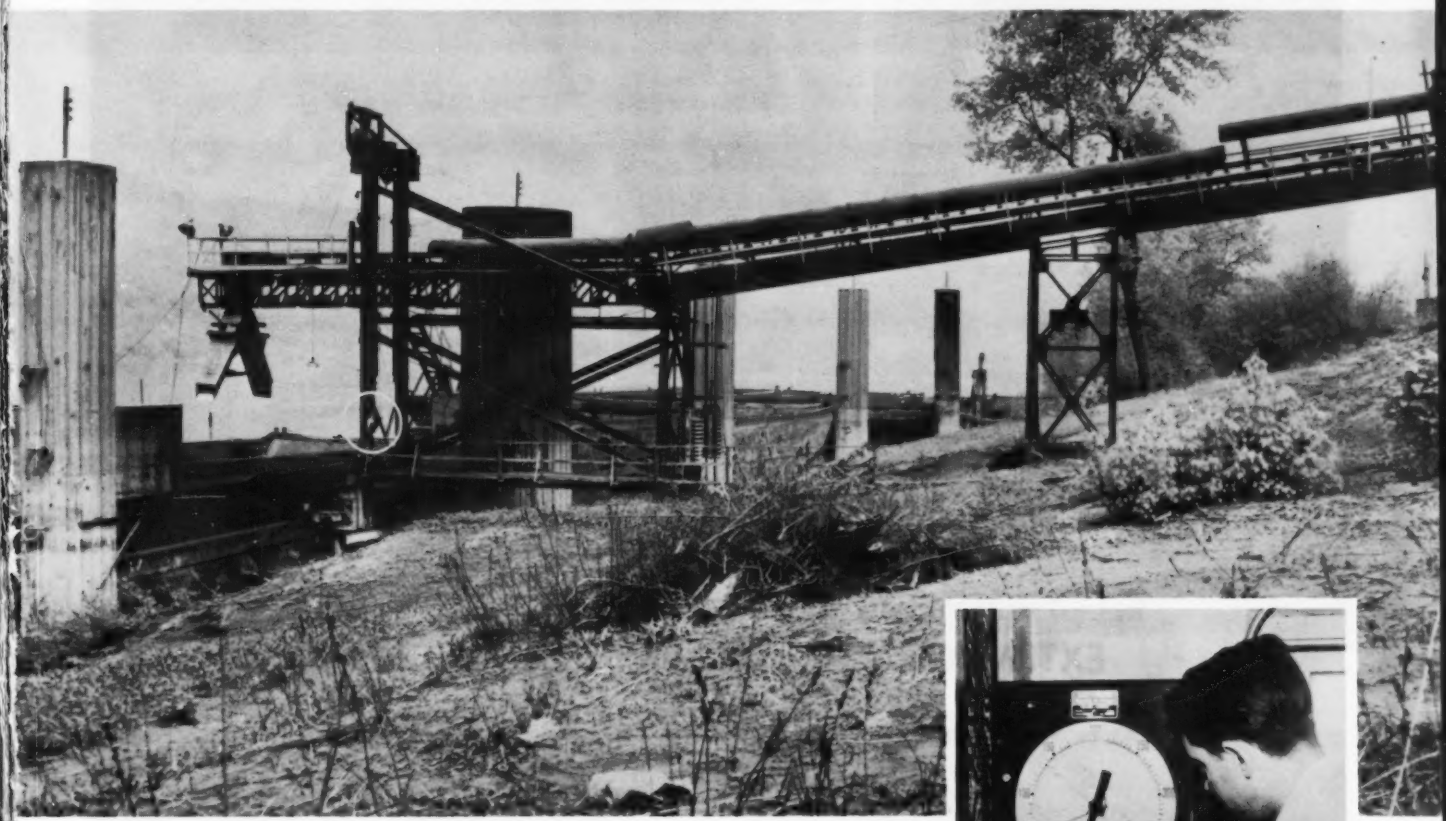


FIG. 3—Coal being loaded on river barges at the Alexander mine of The Valley Camp Coal Company, Moundsville, W. Va., is weighed continuously on the conveyor belt under the raised portion of the sheltering cover (right) by an electrical scale supplied by Trans-Weigh Company, Wayne, Pa.

that adds up the total weight passing over the belt.

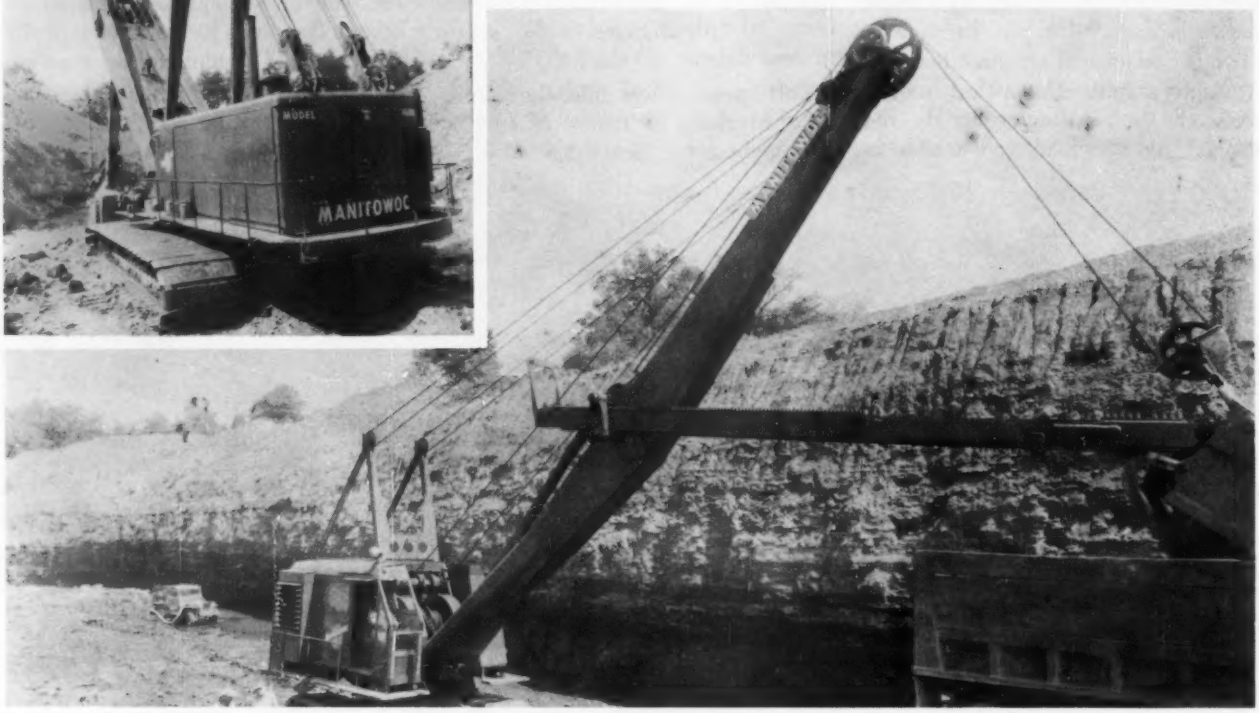
Accuracy of the weighing equipment is reported to be within one per cent. Contributing to high accuracy are four special precision rollers which replaced old conveyor rollers at the point of installation of the Belt-Meter.

In addition to the high accuracy, dependability, and convenience in determining barge lading, the Belt-Meter is being used to check estimated tonnages coming out of the mine cars and for making more accurate daily reports of coal handled. Under normal operating conditions the belt carries about 250 tons per hour. Coal shipped by rail and highway truck is weighed by other methods.

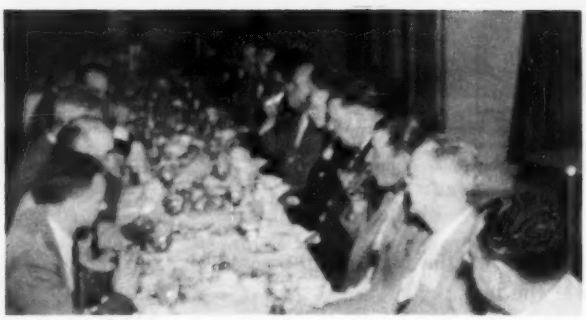
FIG. 4—The Belt-Meter dial indicator with circular chart recorder and weight totalizer in the Alexander mine office 100 yards from the Baldwin SR-14 load cell shows rates of coal movement in tons per hour and the total tonnage moved on the belt.

Manitowac Model 4500 shovel stripping overburden at the Dudek Coal Co., near Bannock, Ohio.

Manitowac Model 3500 shovel strips and loads coal for the Terramana Coal Co., near Steubenville, Ohio.



ELECTRO-MECHANICAL ASSOCIATION PLAN EXTENSION OF FAR WEST ACTIVITIES



ABOVE LEFT—Officiating at the meeting were, left: W. J. Gunther, Purchasing Agent, Imperial Coal Co., Denver, Colo.; W. R. Wood, President of the Association; J. W. Hunt, First Vice President and A. Z. Dimitroff, U. S. Bureau of Mines, Denver, Colo.

ABOVE RIGHT—View of the group in attendance.

Officials and members of the Electro-Mechanical Maintenance Association who were in Cleveland for the coal show met at the Almstead Hotel at noon, June 17 to discuss with representatives of far western coal mines the possibility of extending activities to the states of Colorado, Utah and Wyoming. No final statement was issued at this meeting but it looks very much like the Association will extend its activities to that area.

This new Allis-Chalmers HD-21 tractor is backfilling at the operation of the Tri-County Coal Company near Boyers, Pa.

Michigan Tractor Shovel loading stock pile coal at the Adamsburg Coal Co., Adamsburg, Pa.

Six-inch Jaeger pump in operation at the Aloe Coal Co., near Imperial, Pa.

YOUR NEW EQUIPMENT DEPARTMENT

AUTOMATIC — ARC COMPENSATOR

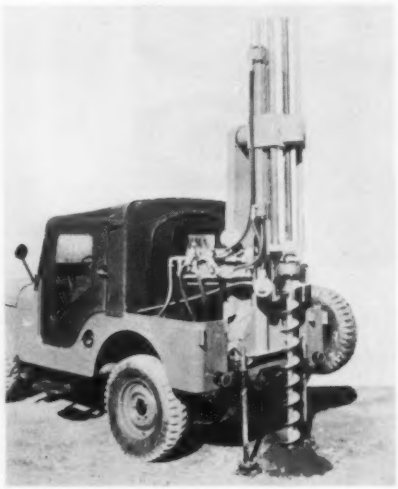
The new amazing automatic arc compensator assemblies convert standard type brake and clutch friction

bands into secondary actuating mechanisms. Maximum engagement of lining materials with drum surfaces are maintained regardless of lining wear or drum distortion by its automatic arc compensating means. Present actuating pressures delivered to these bands by any type system is automatically multiplied and equally distributed over its drum surfaces by its self-levering means resulting in required lower actuating pressure delivery by the system.

Earth moving equipment incorporating automatic arc compensators into their brake and clutch friction systems will obtain the following excellent results: Production increase due to positive controls—reduction of mechanical maintenance due to less working pressures in systems—ease of controls to insure less operator fa-

tigue—longer life obtained from lining materials due to maximum area in constant contact with drum surfaces.

Manufactured and installed by the Brake Engineering Co., 1510 Main St., Wheeling, W. Va.



The Toledo Earth Drill is shown mounted on a Jeep. The unit is in drilling position. For road travel, the drill is moved hydraulically into the bed of the vehicle assuring a better balance for roadability. The drill may be mounted on either two or four-wheel drive vehicles.

Accurate data on soil structures and rock formations in nearly any type of terrain can be had, efficiently and speedily, with the newly developed Toledo Earth Drill mounted on either a two or four-wheel drive vehicle.

The drill was developed by the mechanical engineering section of the Toledo Testing Laboratory, a 30-year-old concern specializing in subsurface exploration of the ground.

The Toledo Earth Drill, which may be mounted on a Jeep for mobility, combines rugged construction with relatively lightweight. The lightweight feature enables operators to move the drill to sites over rough terrain, through soft and muddy ground and into wooded areas. After completion of the drilling operation, the unit is quickly readied for road travel to another site.

The drill is designed for heavy duty performance and has been proved in actual field work over the last several years by Toledo Testing Laboratory employees. The company is using a large number of these units in subterranean explorations throughout the United States. The soil sampling jobs where the Toledo Earth Drill has performed successfully includes investigations of soils and rock for building foundations, metal prospecting, uranium prospecting, drilling blast holes, post hole digging, drilling concrete cores from pavements or floor slabs. It also can be used for shallow well digging about 100 feet into soil.

In operation, the drill can receive its power from a power take-off of a vehicle or from another power source. The unit in drilling position is moved out from the vehicle by a hydraulic system. Two jacks at the rear of the vehicle stabilize it and drill, keeping both level during the drilling operation. For road travel, the drilling unit is moved into the bed of the vehicle, thus giving a better balanced load. The complete drill unit is removed easily from the vehicle on which it is mounted and can be transported by other means.

The Toledo Earth Drill, in addition to boring into the ground with continuous flights of augers, can perform rock drilling with the insertion of drill rods in the hollow rotating drill stem and the attachment of either diamond or steel drill bits, using chilled steel shot as the overburden, either lightweight plastic or steel casing pipe is dropped into the hole and seated on the rock to carry water and sludge to the ground's surface.

Additional information about the drill may be obtained from Continental Equipment Sales, Inc., 1810 N. Twelfth St., Toledo, Ohio.

HITCHMAN KEEPS PACE

(Continued from Page 17)

mine. On the Hitchman property pit water can be drained naturally.

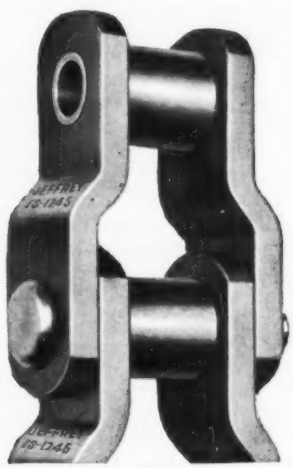
The overburden is drilled with two truck mounted rotary drills. After shooting a Marion Model 5323 shovel with 108 foot boom and 18 cubic yard dipper spoils the overburden in one of the pits. In another pit is a Monaghan Model 200W dragline with Red Arch bucket having a capacity of 6 cubic yards. This dragline can be made to handle a larger bucket by increasing the power unit in it.

The coal seam is hard and must also be shot for loading. The loading is done with a P & H and Northwest shovel, both having Esco coal loading dippers. Haulage roads are made and maintained by a Caterpillar No. 12 Patrol Grader. The output can be washed or loaded as run-o-mine. The washing unit is Jeffrey Diaphragm Jig having 110 tph capacity. Washed coal sizes run from slack, to stoker, nut and 2x4 lump.

Spoilbanks are backfilled by a Caterpillar D-8 tractor and an International TD24 tractor.

The West Virginia operation lies about six miles south of Clarksburg and is in the Pittsburgh seam of coal which averages 72 inches in thickness. There the clay, shale and rock overburden running up to 90 feet thick is moved with a Lima Model 2400 shovel having 5½ cubic yard dipper and a Page Model 726 dragline with 14 cubic yard Page bucket. In the high areas the Lima shovel makes the first (top) cut in the overburden, then the bench is drilled with a Winter-Weiss and Davey Rotary drills for the Page dragline. The dragline has a 150 foot boom and makes 75 foot wide cuts. Loading is done with a Marion Model 93-M shovel, equipped with a 4-yard coal loading dipper.

Highwalls are drilled with two Model 56 Compton Augers having 48 inch heads. These augers drill holes averaging 150 deep and produce an average of 700 tons in 8 hours. At this operation as well as at the Pennsylvania operation the spoil banks are back levelled in accordance with the specifications of the West Virginia law.



JEFFREY STR CHAIN

Better equipment results when Jeffrey top quality STR drive chain is used for flexible transmission of power.

Jeffrey STR has maximum strength . . minimum weight . . and added reserves for long periods of normal wear plus shock from unexpected overloads.

If you operate mixers, dredges, power shovels, ditchers, loaders or other unit machines, see us for information on Jeffrey STR. Replace worn out chains with Jeffrey equipment.

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75 MAYSVILLE PIKE ZANESVILLE, OHIO GL. 2-7601
(Also Headquarters for MacWhyte and American Steel & Wire)

JOHN A. VICKROY

John A. Vickroy, who is now representing the George L. Wilson Co., Pittsburgh, handling construction equipment was formerly with the Carbon Coal Co. of Grove City, Pa., in association with his brother, Geo. Vickroy, co-owner and manger.

THERE IS NO *Magic* IN THE MACHINERY BUSINESS
BECAUSE OF OUR FAIR DEALINGS WITH THE PUBLIC

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SELLS THE MOST MINING EQUIPMENT AND AT REASONABLE PRICES ALWAYS

We Own What We Advertise.
All types of Joy Cutters, Shuttle Cars, Cat Trucks, Belt Conveyors, Chain Conveyors, etc. Includes:

JOY EQUIPMENT—rebuilt

1—Joy 11RU rubber tired cutter.
1—Joy 12BU, 9E Loader, 26" hi. Rebuilt.
1—Joy 12BU, 7E Loader, bargain.
1—Joy 14BU, low pedestal Loader, 38V head motors.
1—Joy 14BU, 7BE Loader, 10 H. P. head motors.
5—Joy 14BU,7CE Loaders, 10 H. P. motors.
3—Joy 8BU, type 11E, Loaders.
1—Joy 3 JCM Continuous Miner, 34" hi.
4—Joy 32E9 Shuttle Cars.
2—Joy 32D Battery Cars.
3—Joy 5SC Battery Shuttle Cars
4—Joy 5SC Shuttle Cars, 250 volt DC
4—Joy 6SC four wheel drive Shuttle Cars
1—Joy T1 Standard Cat Truck
1—Joy T-2-5 Cat Truck, AC
1—Joy T-2-5 low pan Cat Truck, DC
1—Joy Ladel MTB 30", 25 HP, tandem drive Belt Conveyor
3—Joy Ladel MTB 30", 40 HP, tandem drive Belt Conveyors
1—Joy Ladel MTB 30", 60 HP, tandem drive Belt Conveyors.
10,000 Ft. Joy Ladel 30" Structure
15,000 Ft. 30" Conveyor Belt
6—Joy Ladel 12" Chain Conveyors, 300 Ft.
2—Joy PL11-14 Elevators on rubber.
1—Joy PL11-5E Elevator
1—Joy PL11-7E Elevator
4—Joy 11B Cutting Machines, like new
4—Joy 7B1 Cutting Machines, rebuilt

LOCOMOTIVES

1—Goodman 6 ton, 24" hi, practically new
1—Jeffrey 15 ton, type MH-100, 250 volt, 48" gauge
3—Jeffrey 10 ton, type MH-78, 42" and 44" gauge
2—Jeffrey 15 ton, Motor Units, 115 H.P. complete with trucks
3—Jeffrey 8 ton, type MH-100, 42", 44" and 48" gauge
12—Jeffrey 6 ton, type MH-88, 42", 44" and 48" gauge
2—Jeffrey 4 ton, type MH-96, 42" and 48" gauge
3—G.-E 4 ton, type 825 Locomotives, 26" hi.
10—G.-E. 6 ton, type 801, 803, 821 Locomotivess, 42", 44" and 48 gauge
1—G.-E. 8 ton, type 822 Locomotive, 44" gauge
3—G.-E. 10 ton, type 809 Locomotives, 42", 44", and 48" gauge
8—Goodman type 33, 6 ton, 44" and 48" gauge
2—Goodman 8 ton, type 32A, 44" and 48" gauge
2—Goodman 13 ton, type 29A, 44" and 48" gauge
1—Goodman 10 ton, type 34B, 48" gauge
3—Westinghouse, type 902, 4 ton
2—Westinghouse, type 907, 10 ton
6—Gasoline and Diesel Locomotives, 4 to 20 tons

TIPPLE EQUIPMENT

2—Jeffrey 30"x30" Crushers, new
2—Double Roll Crushers
3—Single Roll Crushers
2—Cedar Rapids portable super Screening Plants
1—Allis-Chalmers 5'x14' Ripplflo Vibrator
1—4'x10' Robbins Gyrex Vibrator
Feeders, Drag Conveyors and Loading Booms

CUTTING MACHINES

1—Jeffrey 29U on rubber
1—Jeffrey 29C on cats
6—Jeffrey 35L's, like new
12—Jeffrey 35B and 35BB
2—Jeffrey 29B's on tracks
2—Jeffrey 29L, track mounted
4—Jeffrey 29C, track mounted
4—Baby Goodman 212's, rebuilt
6—Goodman 412 Cutters, 18" hi.
3—Goodman 512EJ Cutters
15—Goodman 12AA and 112AA
2—Goodman 224 Slabbers
2—Goodman 724 Slabbers

LOADING MACHINES

12—Joy Loaders, all types
1—Jeffrey 61 CLR on rubber, 26"
2—Jeffrey 43L Shortwall Loaders
3—Jeffrey L-500 Loaders
2—Goodman 360 Loaders
4—Myers Whaley No. 3 Automat Loaders

CONVEYORS

10—Jeffrey 61 HG Face Conveyors
12—Jeffrey 61 AM Room Conveyors, 300'
4—61EW Elevating Conveyors
2—61WH 15" Room Conveyors
1—Joy 30" Belt Conveyor
4—Joy Ladel UN-17 Shakers
10—Goodman G-12½ and G-15 Shakers

CONVERTERS AND DIESEL PLANTS

1—Cummins, 125KW, DC
2—Superior, 100KW, DC
1—Allis-Chalmers 200KVA, AC (Natural Gas)
3—100KW, G.-E. TCC-6 Rotaries, 250 volt DC
)—G.-E. HCC-6 Rotary
1—200KW, G.-E. HCC-6 Rotary
1—200KW, Allis-Chalmers Rotary
1—300KW Westinghouse Rotary
1—400KW, G.-E. Rotary
(All the above with 6900/13000 and-or 2300/4000 primary transformers).
2—150KW MG Sets, G.-E. & Westinghouse
1—200KW, MG Set, Westinghouse
1—300KW, MG Set, Westinghouse
Complete Steam Plant. Will sell all or any part. Boiler like new. 1100 H.P.—500 H.P. Transformers, Turbines, etc.

ROCK DUSTERS

1—MSA hi pressure on rubber
1—MSA hi pressure on skids
1—MSA low pressure Room Duster
1—MSA hi pressure, track mounted
1—Canton Distributor, low pressure
1—Canton hi pressure, track mounted

MISCELLANEOUS

12—Air Compressors, 1 H.P. to 40 H.P.
40—Mine Pumps, all types
Pipe—Plastic, steel, transite, all sizes
400—Mine Cars, Drop Bottom and End Dump. All gauges.
5—Brown Fayro HKL and HGD Car Spotters
1—12 ton Differential Slate Larry
4—Overhead Bridge Cranes
1—Kanawha Hillside Dump
1—16 Yd. Dragline Bucket
5—Low Vein Water Cars
3—3,000 Gal. Tanks, like new
4—9,000 Gal. Tanks, perfect
Incline Hoists, 25 to 50 H.P.
Machine Tools for Mine Shops
200—Tons Rails, all sizes.
30—Tons Copper Trolley and Feeder
6—Electric Drills, CP-572
300—Transformers from 1 to 2000 KVA—110 to 13000 primary volts
400—Electric Motors, 3 to 200 H.P.
Suspension Bridge, 300' long for river crossings
Huge Stock of Mine Supplies

Thousands of Other Items Send Us Your Inquiries
It Doesn't Cost—It Pays to Buy From

J. T. FISH & COMPANY

Logan, West Virginia Phone 2825

"EUCS" are PACE-SETTERS for PROFITS

For coal stripping operations Euclid Rear-Dumps and Bottom-Dumps rate high in keeping overburden and coal hauling costs low. Their ability to stay on the job month after month, with less down time for servicing and repairs, has made "Eucs" the first choice of leading mine operators. Have your nearby Euclid dealer make a production and cost estimate for your operation . . . there's no cost or obligation, and there's a good chance that he can show you how to cut your hauling costs.

• Rear-Dump Euclids, of 10, 15, 22, 34 and 50 ton capacities, are powered by diesel engines of 125 to 600 h. p. With standard 5 or 10 speed transmission, or with Torqmatic Drive, they have a range of travel speeds up to 36 m. p. h. with full payload. These "Eucs" are unequalled for performance and low operating cost on the toughest jobs. No matter what your off-the-highway hauling requirements may be, there's a Euclid model that can haul more loads per hour at lower cost per ton or yard moved.

• Bottom-Dump Euclid Coal Haulers are designed and built as complete units . . . they have good power-to-weight ratio and proper weight distribution for traction and ease of handling. Short wheel base of tractor and universal hitch design permit short turns and make these big "Eucs" easy to handle. Large single or dual tires on tractor drive and trailer wheels provide good traction and flotation. Powered by 190 to 300 h. p. engines, with 5 or 10 speed standard transmission or with Torqmatic Drive, these Coal Haulers have capacities of 25, 32 and 40 tons.

EUCLID DIVISION GENERAL MOTORS CORPORATION,
Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

EUCLID

GM GENERAL MOTORS

CONSTRUCTION SUPPLIES

PHONE CEDAR 1-7710 ● 310 MENDOTA ST., PGH. 12, PA.

GEORGE L. WILSON and COMPANY

Mr. Campello

Marion Power Shovel Company of Marion, Ohio, is announcing the appointment of Robert Campello as sales manager.

In his new post Mr. Campello will be in charge of sales of all Marion machines sold through distributors in the United States and Canada. These machines include a complete range of power shovels sizes from ½ to 4 cubic yards dipper capacity and cranes from 15 to 160 tons lifting capacity.

A veteran of long standing in the power shovel industry, he was associated with the Bucyrus-Erie Company of South Milwaukee, Wisconsin, for 17 years in various sales capacities prior to coming to Marion. He served as manager of Bucyrus-Erie's office in Washington, D. C., where he was in charge of all the firm's governmental operations.

Horizontal truck-mounted and self-propelled McCarthy auger drills for earth and rock boring are featured in 4-page Bulletin M-105, published by The Salem Tool Company, S. Ellsworth Ave., Salem, Ohio.

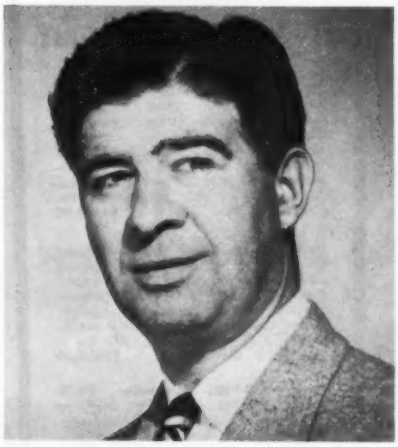
Powered by gasoline engine, diesel or electric motor, the drills bore up to 12" diameter holes to depths of 150 ft. in earth formations. Crosswise or length-wise truck mountings, individually operated leveling jacks, heavy-duty main frame and transmission are versatile features. Drilling height ranges from 4½ to 7 feet.

The technical and operating story of its new HD-16 crawler tractor is now available from the Allis-Chalmers Manufacturing Company, Tractor Group, Construction Machinery Division, Milwaukee, Wisconsin.

The new 2-color brochure includes a pictorial review of the design, engineering and operating, advancements which combine to make the HD-16 outstanding in its weight and h.p. classification. Also included are specifications and information on operator comforts which, with matched attachments and accessories available, means sustained high production with the unit.

J. W. Bloomquist, Domestic Sales Manager of Euclid Division, General Motors Corporation, has announced the appointment of Euclid Tractor & Equipment, Inc., of Salem as authorized dealer for Virginia except for northeastern counties covered by L. B. Smith, Inc., of Baltimore.

H. Wilson Nash heads this new dealership that will handle sales and service of the complete Euclid line.



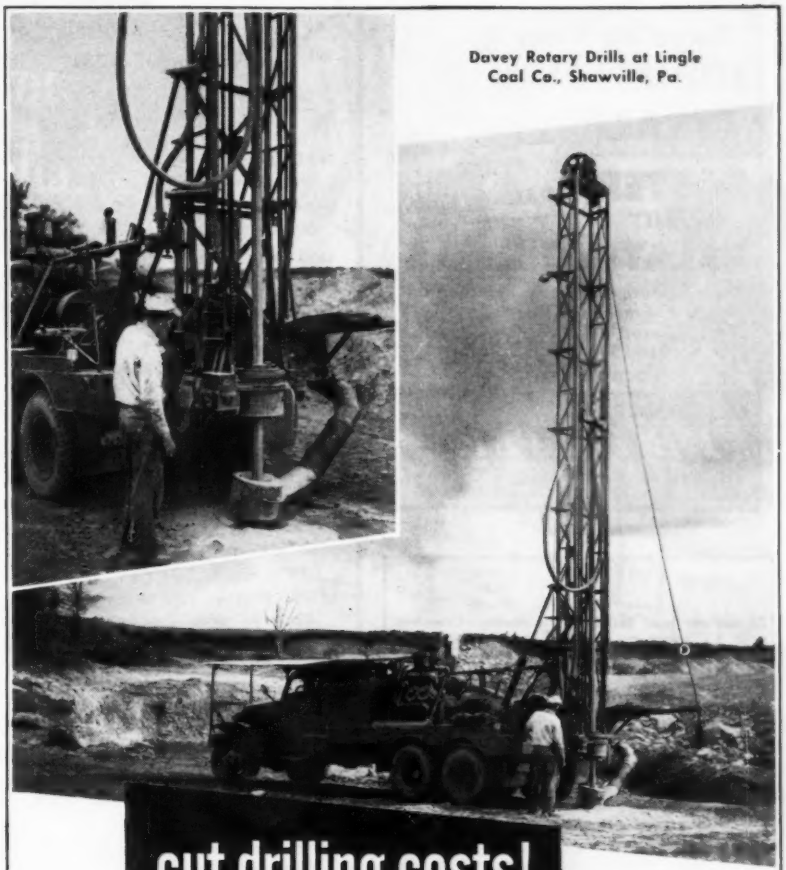
Wilmot Engineering Co., Hazleton, Pa., announces that A. G. Gilbert has been appointed General Sales Manager, in charge of sales for all the company's divisions. Previously with Heyl & Patterson, Inc., Mr. Gilbert has been closely identified with the development and sale of preparation equipment in the bituminous coal industry. It is learned from George L. Wilmot, President of the long-established anthracite equipment manufacturer, that the appointment is a further step in the company's expanding program of marketing equipment for the soft coal industry. Mr. Gilbert is a member of AIME and is currently serving on various committees of American Mining Congress. He will headquarter at Wilmot's White Haven, Pa. plant. Advertising and sales promotion will be under the direction of Mr. Harold R. Middleton.

For Sale

Model 1262 P&H 5-yd. Bucket
Fairbanks-Morse-Diesel Engine
$30,000
Model 4-Lorain Shovel or Model H-D-14 AC Tractor
$13,000

Priced for Quick Sale

Write or Call Coal Mining, 4575 Country Club Dr. Pittsburgh 36, Pa. TUxedo 1-9411



Davey Rotary Drills at Lingle Coal Co., Shawville, Pa.

cut drilling costs!

DAVEY

ROTARY DRILLS

For faster, more economical drilling . . . increased coal production at lower costs, leading strip operators rely on Davey. Suitable for mounting on any make of truck, Davey Rotary Drills move fast between blast holes . . . are ideal for low cost core drilling with air . . . easy to set in drilling position.

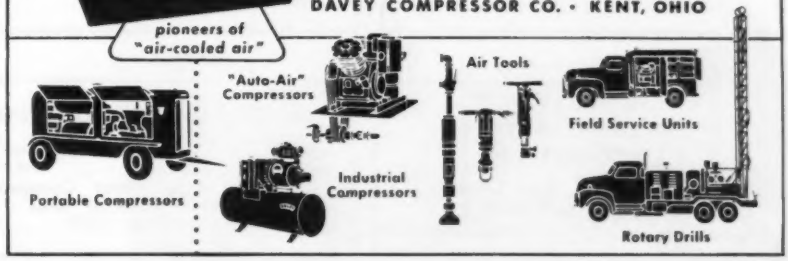
Daveys are available in 6 different models—air blast, mud pump, or combination types. Rated capacities to 2,000 ft. Outstanding features include choice of power take-off or separate power unit operation, automatic hydraulic feed, hydraulic pull down, heavy-duty rotary table, rugged tubular box-type mast . . . AA-1697

Write for full details!

DAVEY

pioneers of "air-cooled air"

DAVEY COMPRESSOR CO. • KENT, OHIO



Save on Your INDUSTRIAL TRACK

FOSTER QUALITY — FULLY GUARANTEED

RELAYING RAILS

Handle more cars better—cost less to install and maintain. Foster stocks all Rail Sections 12# thru 175#, Switch Material and Track Accessories.

SEND FOR CATALOGS

RAILS - TRACK EQUIPMENT - PIPE - PILING

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PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

75 ton per hour Belknap Coal Washer—Complete with R-C conveyors and coal loading conveyors, automatic gravity control, washes 4"x5/16", ready to operate.

Manitowoc 4500 Dragline—6 yd., 20' boom, Cummins 12 cyl. engine, torque converter. New in 1953. Can be purchased f.o.b. Cars at the mine. Serial in 4600.

Lima 1201—Combination shovel and drag, new in 1950, shovel boom 35', stick 27', 3-yd. buckets, drag 80', Cummins engine. Machine in top condition.

Hardzogg 30" Highway Coal Auger—100' augers, 35' conveyor, Ford industrial engine, machine ready to operate.

Marion 7200 Dragline—5 yd., 135' boom, used approx. 3 years, Cummins engine. Can be inspected while operating.

WSM 850 H. P. Hoist—Drum 12', Diameter 13', face holds 12000' of 1⅜" rope. Completely electric and safety controls. Ready to operate.

Barber Green Conveyors—Portable type, on tires, belt 18'x35', 220-440 volt, 16"x40' flight conveyor with gas engine on rubber.

Joy 8 BU—14 BU, 11 BU loaders.
Joy MTB—Belt conveyor 1000'.
Jeffrey 74BR—Hydraulic coal drill on rubber tires.
Goodman 512—Permissible cutting machine.
Mine Safety Rock Duster—Permissible.

WANTED

Mine Cars—44" ga., end gate, max. length 11', max. width 6', height 43" or up.

T. L. (Les) Simpson

MACHINERY AGENT

1200 Woodbourne Ave.
Pittsburgh 26, Pa.
Phone LEhigh 12254

SHOVELS—DRAGLINES
ROTARY DRILLS

190-B Bucyrus-Erie 8-yard electric shovel. Like new.

170-B Bucyrus-Erie electric hi-lift, 5-yard shovel.

1600 P & H 6-yard electric shovel

2400 Lima 6-yard diesel shovel.

120-B Bucyrus-Erie electric 5-yard shovel.

1400 P & H 4-yard electric shovel.

111-M Marion 3½-yard diesel shovel.

4161 Marion 5-yard electric shovel. Worked about three years.

1201 Lima HiLift diesel shovel, 42' boom, 32' stick, 2½-yard dipper

1201 Lima semi-hi-lift diesel shovel, 36' boom, 27' stick, 3-yard dipper.

3500 Manitowoc Hi-Lift diesel shovel, 45' boom, 35' stick, 2-yard dipper.

111-M Marion Hi-Lift diesel shovel, 43' boom, 34' stick, 3-yard dipper.

40-A Marion Hi-Lift diesel shovel, 45' boom, 34' stick, 2½-yard dipper.

450-W Bucyrus-Erie diesel dragline, 165' boom, 13-yard bucket.

625 Page diesel dragline, 150' boom, 9-yard bucket.

621 Page diesel dragline, 130' boom, 5-yard bucket.

5W Bucyrus-Erie diesel dragline, 125' boom, 5-yard bucket.

2400 Lima diesel dragline, 130' boom, 5-yard bucket.

4500 Manitowoc diesel dragline, 120' boom, 5-yard bucket.

1055 P & H diesel dragline, 80' boom, 4-yard bucket.

1201 Lima diesel dragline, 85' boom, 3-yard bucket. Independent boom hoist.

3500 Manitowoc diesel dragline, 85' boom, 2½-yard bucket.

955 P & H diesel dragline, 85' boom, 2½-yard bucket.

ALSO MANY SMALLER SHOVELS AND DRAGLINES

58-BH Joy Champion rotary air drill.

56-BH Joy Middleweight rotary air drill.

ALSO 42T, 29T, and 27T WELL DRILLS.

FRANK SWABB
EQUIPMENT COMPANY, INC.
313 Hazleton Nat'l Bank Bldg.
HAZLETON, PENNA. **GLadstone 5-3658**

NOW at BECKWITH MACHINERY COMPANY

BARGAIN BUY

USED EQUIPMENT

Item 355-P322—Caterpillar D8 Tractor, mounted with LeTourneau Rear Double Drum Control Unit and LaPlant-Choate Straight Blade. Equipped with crankcase guard and electric starting system. Machine is in good operating condition. Sprockets, idlers, and rollers are good. Tracks fair. F.O.B. Pittsburgh, Pa.
"AS IS, WHERE IS" **$4500.00**

Item 954-WV130—Caterpillar Model D8 Tractor, mounted with Model 19A14010 Cardwell Side Boom. Repaired gear box on pipelayer control. Installed new oil gauge. Entire unit is in very good condition. F.O.B. Clarksburg, W. Va.
"BONDED BUY" **....$8500.00**

Item 855-P352—Caterpillar D6-T6 Hilift with 1¾ yd. Bucket. Installed new ring gear on flywheel, overhauled bendix and starting engine clutch, conditioned starting engine, replaced two bottom rollers, reconditioned master clutch, radiator and oil cooler. F.O.B. Pittsburgh, Pa.
"CERTIFIED BUY" **$4500.00**

Item 655-WV136—Caterpillar D6-74" Tractor, mounted with Cat 6A Bulldozer and #46 Hyd. Control. Unit has been completely checked over. Rebuilt transmission, overhauled steering clutches, brakes and hyd. steering boosters. Checked carburetor, magneto, starting motor and starting Bendix. Checked service assem. and reset governor. This unit is in excellent condition. F.O.B. Clarksburg, W. Va.
"BONDED BUY" **$9500.00**

Item 455-P332—Caterpillar D4-60" gauge, mounted with new Teale Loader, S/N 1129, 1 yd. Bucket. Solid bar, long roller (5) track frame, good rollers, track, sprockets and idlers. Serial No. 5T5138.
"BONDED BUY" **$5950.00**

Item 1054-C171—Cat. DW10 Tractor and W10 Wagon. Has high sideboards. Unit used only three months. F.O.B. Clearfield, Pa.
"BONDED BUY" **$18,900.00**

Item 553-C118—Allis-Chalmers HD-14C Tractor with Baker Hyd. Blade. Needs engine repairs but tracks, rollers and general appearance good. Also has sprocket guards, crankcase guard and pull hook. F.O.B. Clearfield, Pa.
"AS IS, WHERE IS" **$2500.00**

BECKWITH MACHINERY COMPANY

6550 Hamilton Avenue, Pittsburgh, Pa.
361-369 Congress St., Bradford, Pa.
Old Town Road, Clearfield, Pa.
1356 E. 12th Street, Erie, Pa.
E. Broadway, Farrell, Pa.
Buckhannon Pike, W. Va. Route 20 (So.), Clarksburg, West Va.

NEW AND REBUILT
STORAGE BATTERY LOCOMOTIVES
Any Size Any Track Gauge
GREENSBURG MACHINE CO.
Greensburg Pennsylvania

4500 Manitowoc Dragline

120' boom, 5½-yd. bucket, Caterpillar diesel engine. Serial No. 4540. New Oct. 1950.
PRICE **$95,000.00**

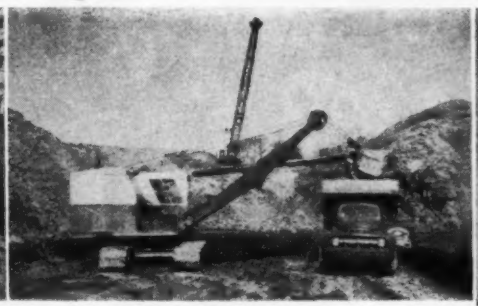
Anderson Equipment Company
Box 1737, Pittsburgh 30, Penna.
Phone: LEhigh 1-6020

to get the most out of your equipment dollar, always remember...

it pays to plan with Highway

On your next stripping job, call in your Highway representative *early*.

He will save you time and money by suggesting exactly the *right* equipment for *your job*.



2 Lima Paymasters operated by *A. W. LOTZE*, Petersburg.

High against the sky is this Lima 1201 dragline on the *A. W. LOTZE* operation, Petersburg.

Lima 2400 . . . *MECH MINING CO.*, Kittanning.

Important equipment on every job . . . Jaeger Pump . . . *DUBOIS COAL CO.*, Dubois.

Highway

AA-1464

EQUIPMENT COMPANY

6465 Hamilton Ave. • Pittsburgh, Pa.

Allis-Chalmers • International Vibro-Tampers • Jaeger Power-Pack Conveyors • General Motors Diesel Engines Gar Wood • Erie Bins • Master • Thor • Baker Michigan Tractor Shovels and Excavator-Cranes Lima Shovels, Cranes, Draglines

GM DIESEL
CASE HISTORY No. 1A3-16

OWNER: Crowe Coal Company, Kansas City, Mo.

INSTALLATION: Six GM Diesel-powered Dart trucks . . . three 20-ton rear-dumps and three 40-ton bottom-dumps. GM Diesel-powered Bucyrus-Erie #38-B shovel with 2¼-yard bucket. The company also operates three 20-ton bottom-dumps powered with 4-cycle Diesels.

PERFORMANCE: GM Diesel-powered trucks have faster pickup, respond to throttle controls better, use less lube oil. Engines take less time—cost less to overhaul. Shovel strips 1000-1200 tons of coal in 7¼ hours—burns 4 gallons of fuel per hour.

Quicker Pickup-Faster Hauling

MISSOURI's Crowe Coal Company operates nine trucks—six powered by General Motors 2-cycle Diesels and three with 4-cycle Diesels. They report the GM Diesel-powered trucks "respond quicker, use less lube oil, are easy to overhaul."

A General Motors Diesel does "respond quicker." It gets more work done than most engines, partially because of its 2-cycle "power on every piston downstroke" design. It costs less to buy. It costs less to maintain because GM Diesel replacement parts cost less (valves up to 62% less and cylinder liners up to 40% less) than parts for comparable Diesels.

Today you can get GM Diesel power in more than 750 different models of equipment built by over 150 manufacturers. Call in your local GM Diesel distributor or write direct for more information.

It Pays to Standardize on

GM
GENERAL MOTORS
DIESEL POWER

DETROIT DIESEL ENGINE DIVISION

GENERAL MOTORS • DETROIT 28, MICHIGAN

Single Engines . . . 30 to 300 H. P. **Multiple Units . . . Up to 893 H. P.**

Advertiser's Index

COAL MINING

September, 1955

Anderson Equipment Co. 32, 35
Beckwith Machinery Company 5, 6, 7, 8, 32, 35
Agency—Hosler Adv. Agency
Cardox Corporation 9
Agency—Glenn-Jordan-Stoetzel, Inc.
Central Ohio Steel Products Co. 10
Compton Incorporated ..... Back Cover
Agency—McHenry Derek Adv.
Davey Compressor Co. 31
Agency—Palm and Patterson, Inc.
Detroit Diesel Engine Div. 36
Esco Electric Steel Foundry Co. ..... Inside Back Cover
Agency—Cole and Weber
Euclid Equipment Co. 29
Agency—Richard J. Brandt, Inc.
Fish Company, J. T. 34
Foster Co., L. B. 32
Agency—Lando Adv.
Frank Swabb Equipment Co. 32
George L. Wilson Co. 30
Greensburg Machine Co. 32
Harold C. Lusk Co. 3
Highway Equipment Co. ..... Front Cover, 4
Agency—Palm and Patterson, Inc.
Imperial Coal Co. 35
Kanawa Steel Equipment Co. ..... Inside Back Cover
Licking View Tool Company, The 3
Agency—Meek and Thomas, Inc.
Manitowoc 2
Agency—Irvin R. Abramson
Marion Power Shovel Co. ..... Inside Front Cover
Moore Flesher Hauling Co. 3
Moore's Industrial Supply Co. ..... Inside Back Cover
Northeastern Supply Co. 27
Ohio Machinery Co. 5, 6, 7, 8
Agency—Hosler Adv. Inc.
Salem Tool Company Inc. 1, 3
Agency—Meek and Thomas, Inc.
Walker Machinery Co. 5, 6, 7, 8
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WANTED TO BUY

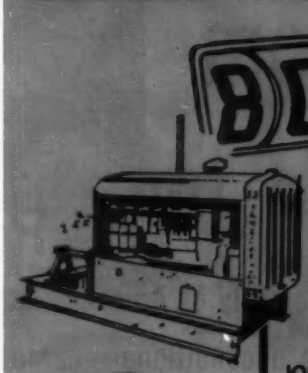
Water Jig Coal Washer, about 100 tons per hour capacity, also screens and conveyors. Write % Coal Mining, 4575 Country Club Drive, Pittsburgh 36, Pa.

4500 Manitowoc Dragline

120' boom, 5½-yd. bucket, Caterpillar diesel engine. Serial No. 4540. New Oct. 1950.
PRICE **$95,000.00**

Anderson Equipment Company
Box 1737, Pittsburgh 30, Penna.
Phone: LEhigh 1-6020

Long Life Facts!



8 D D D D D

MILES BETWEEN OVERHAULS!

CAT DIESELS OFTEN WORK 20,000 HOURS BETWEEN MAJOR RECONDITIONING JOBS, COMPARABLE TO 800,000 AUTOMOBILE MILES AT 40 MPH

"OIL CHANGE" EVERY 10 SECONDS!

EVERY DROP OF OIL IN A CAT ENGINE IS COMPLETELY FILTERED APPROXIMATELY EVERY 10 SECONDS! CAT FULL-FLOW FILTER ELEMENTS TRAP AND HOLD WEAR-CAUSING PARTICLES OF DIRT AND SLUDGE AS SMALL AS 39/1,000,000 THS OF AN INCH, YET OIL AND ADDITIVES FLOW FREELY!

900 SQ. IN. MAZE TRAPS LONG LIFE ENEMIES IN FUEL

FUEL, TOO, IS FILTERED IN THE CAT ENGINE. MORE THAN 900 SQUARE INCHES OF PLASTICIZED FILTER AREA TRAPS FOREIGN MATERIAL THAT WOULD WEAR HIGH-PRECISION PARTS OF THE FUEL INJECTION SYSTEM. ANOTHER REASON FOR THE *LONG* PERIODS BETWEEN OVERHAULS.

REMEMBER: ONLY YOUR CATERPILLAR DEALER OFFERS YOU LONG LIFE CATERPILLAR PARTS

"Caterpillar" and Cat are Registered Trademarks of Caterpillar Tractor Co.

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CLARKSBURG, WEST VIRGINIA

The buyer of mining equipment from Highway receives two "plus" values.

+ One is the quality warranty of America's leading equipment manufacturers.
+ The other, Highway's own unconditional guarantee backed by round-the-clock service.

Lima 1201 stripping for
KRISTIANSON & JOHNSON COAL CO., Lanse.

Small . . . but mighty important, is this Jaeger Pump
on *BOYLES COAL & SUPPLY CO.* job, Clintonville.

Lima 2400
. . . *ISEMAN MINING CO.*, New Bethlehem.

ALLIS-CHALMERS • GENERAL MOTORS DIESEL ENGINES
LIMA SHOVELS, CRANES, DRAGLINES • BAKER • THOR
POWER-PACK CONVEYORS • GAR WOOD • ERIE BINS
MICHIGAN TRACTOR SHOVELS AND EXCAVATOR-CRANES
MASTER • INTERNATIONAL VIBRO-TAMPERS • JAEGER

AA-1469

Highway

EQUIPMENT COMPANY
6465 Hamilton Ave. • Pittsburgh, Pa.

DRAG ROPE LIFE INCREASED 25%

says Correale Construction Company

ESCO LONG BOWL® SOCKET GRIPS ALL 6 STRANDS to make rope last longer!

Correale Construction Company operates a *1150-B* Bucyrus-Erie dragline with a 180 ft. boom at a stripping operation near Minersville, Penn. Here are their records on 2½" by 290' ropes, 6 x 19—"W"—I.P.S.—I.W.R.C.:

From January 1947 until April 1951 each set of ropes averages 926,000 yards. *After installing ESCO Long Bowl Sockets in April, rope life was increased to 1,166,000 yards*—about 25%. This is a savings of approximately $500 for each set of ropes or a total of $5000 on the ten sets replaced since April 1951.

ESCO Long Bowl Sockets Can Reduce Costs on Your Job. See your *ESCO* Dealer

This is a cutaway view of an ESCO Long Bowl Socket showing grip on six strands.
1
2
3
4
5
6
Compare to conventional socket which grips three strands. Just one more reason why you should insist on ESCO Replacement Parts.

see your *ESCO* dealer

WE CAN HELP YOU CUT COST . . . . . .

Call Our ESCO Dealer

. • .

KANAWAHA STEEL AND EQUIPMENT COMPANY

P. O. Box 2361

Charleston, W. Va.

P. O. Box 687

Weirton, W. Va.

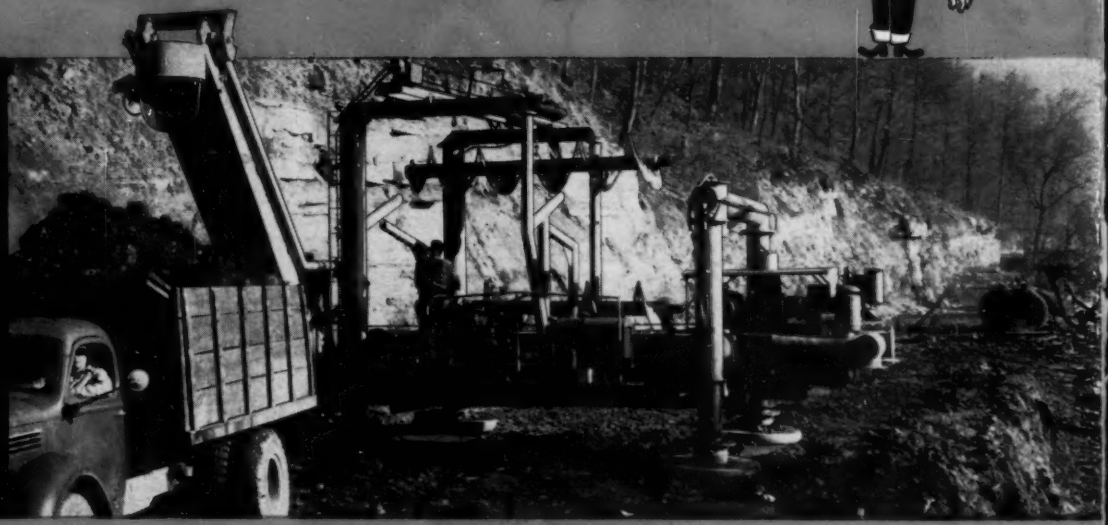
. • .

MOORE'S INDUSTRIAL SUPPLY COMPANY

Houtzdale, Penna.

SMALL but MIGHTY!

The all new



Compton Budget Model 28 Coal Auger

Ideal for narrow pits and short benches

Here it is! The mighty mite of the Compton Coal Auger family—Model 28—designed, like its big brothers, to raise production figures and cut operating costs—This new machine will produce up to 50 tons per hour. Only 28 feet long, light weight and easily moved from pit to pit with optional available tail wheel assembly, this Compton Coal Auger enables a 3 man crew to efficiently handle tough mining assignments in pits and/or benches as small as 30 feet—augering to a depth of 150 feet.

Model 28 incorporates many of the time-proven features found only in Compton Coal Augers:

1. **Model 28 with all size cutting heads drills coal within 4¾″ of the bottom—assuring maximum recovery.**
2. **Easily accessible auger sections racked on the frame.**
3. **Elevating conveyor is integral part of the machine.**
4. **Hydraulic jack legs (with self-leveling pontoons) allow drilling up to 150 feet without misalignment.**
5. **Single or vertical overlapping holes can be drilled for greater recovery.**
6. **Easy to move along working face of highwall.**

It will pay you to look into the advantages of the Compton Coal Auger. A Compton representative will help you review your property for the proper auger application.

GENERAL SPECIFICATIONS
MODEL 28

Length: 28 feet
Weight: Approx. 25 tons
Carries 12—12½ ft. auger sections
Required pit width: 30 ft. min.
Power: 175 hp Diesel engine
Hydraulic Frame Jack Lift: 54 inch
Auger Diameter: 44″ to 28″
Max. Drilling Depth: 150 feet

Cutting Head: Compton non-clogging type with built-in spider bearing assembly provides straighter drilling with less frictional drag.

Compton, Inc.

ORIGINATORS OF COMPTON LUMP RECOVERY HEADS

BOX 1946 TELEPHONE 4-6384 • CLARKSBURG, WEST VIRGINIA